

**From,**  
**Thiru S.Ramachandran**  
S/o Sundar Reddiyar,  
1/28, North Street,  
Ethirkottai, Vembakottai Taluk,  
Virudhunagar – 626131.

**To**  
**District Environmental Engineer (Virudhunagar District)**  
TNPCB, No.23, Master Plan Area,  
Sathur Road, Collectorate,  
Virudhunagar - 626 002.

**Sub: Submission of Draft EIA/EMP report and Summary for Rough stone and Gravel Quarry of Thiru S.Ramachandran at 672/3, 674, 675/2, 676/3 over an area of 2.28.0Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu – Public Hearing\_Reg**

**Ref: ToR granted by SEIAA, Tamil Nadu vide letter SEIAA-TN/F.No.9271/SEAC/ToR 1208/2022 dated 14.07.2022.**

Sir,

With reference to the above mentioned subject, I am herewith submitting the copies of Draft EIA/EMP report and Summary of EIA/EMP report in English and Tamil along with CD for Rough stone and Gravel Quarry at 672/3, 674, 675/2, 676/3 over an area of 2.28.0Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu.

As per the terms of reference issued by SEIAA, Tamil Nadu referred to as (1) above, point no. 39 stipulates conduction of public hearing. Hence, I request you to consider conducting a public hearing for my project at the earliest.

Here with enclosed D.D No –                      dated                      for public hearing.

Thank you.

Yours Faithfully,



Thiru S.Ramachandran  
Encl: as above



# DRAFT EIA / EMP REPORT

FOR

## ROUGHSTONE AND GRAVEL QUARRY

Extent	2.28.0Ha
Location	Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu
S.F.Nos	672/3, 674, 675/2, 676/3
Land Type	Patta Land
Production for 5 years	Roughstone – 1,97,455 m <sup>3</sup> Gravel – 46,896 m <sup>3</sup> Weathered Rock – 31,264 m <sup>3</sup>
Depth	20m bgl
Lease Period	5 years

- Terms of Reference issued by SEIAA, Tamil Nadu vide SEIAA-TN/F.No.9271/SEAC/ToR 1208/2022 dated 14.07.2022.
- Baseline Monitoring Period – Winter Season (December 2022 to February 2023)

### **PROJECT PROPONENT**

# THIRU S. RAMACHANDRAN

1/28, North Street, Ethirkottai, Vembakottai Taluk, Virudhunagar – 626131.

### **CONSULTANT**

## CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

9B/4, Bharathwajar Street, East Tambaram, Chennai-600059.

Ph: 044-22395170, Cell: 09444133619 Email : cecgiri@yahoo.com,





**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**REVISIONS OF EIA/EMP REPORT**

Revision number	Report Status	Date of submission
00/NOV/23	Draft EIA /EMP Report	22.11.2023

Environmental Impact Assessment & Environmental Management Plan Report for Rough stone and Gravel Quarry of Thiru S.Ramachandran at Rough stone and Gravel Quarry at 672/3, 674, 675/2, 676/3 over an area of 2.28.0Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu was prepared by Creative Engineers & Consultants and authorized for submission by Mr. P.Giri, EIA Coordinator, CEO, of Creative Engineers & Consultants on 22.11.2023 after due review by the personnel and consultation with Thiru S.Ramachandran. Current Revision number of the EIA/EMP report is 00/NOV/23, signifying as per the revision mentioned in the above table that this is a draft EIA/EMP report.





## **PROJECT PROPONENT DECLARATION**

I, Thiru S.Ramachandran received ToR under EIA Notification 2006 from SEIAA, Tamil Nadu vide their SEIAA-TN/F.No.9271/SEAC/ToR 1208/2022 dated 14.07.2022 for mining lease for Rough stone and Gravel Quarry at 672/3, 674, 675/2, 676/3 over an area of 2.28.0 Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu.

I have entrusted the EIA study to M/s. Creative Engineers & Consultants (CEC), Chennai who have been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India with their accreditation valid upto 23.12.2023.

The Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) have been prepared as per the generic structure proposed in the EIA notification 2006, ToR issued by SEIAA, Tamil Nadu. The prescribed ToR along with compliance is also incorporated in the EIA/EMP Report.

This report is prepared based on the information and data obtained from the Mining Plan and other records and the field study carried out by the consultant. The data given in the EIA/EMP report are factually correct to the best of my knowledge.



**Thiru S.Ramachandran**







# CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,  
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

## EIA Consultant Undertaking

[In compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

**Creative Engineers & Consultants** (CEC) is an NABL accredited testing Laboratory, and also NABET accredited Category–A environment consultancy organization for preparing EIA/EMP reports for the sectors Mining of minerals, Thermal power plants, Mineral Beneficiation & Cement plants.

CEC has been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India for empanelment of EIA Consultants with accreditation valid upto 23.12.2023.

Thiru S.Ramachandran received ToR under EIA Notification 2006 from SEIAA, Tamil Nadu vide their SEIAA-TN/F.No.9271/SEAC/ToR 1208/2022 dated 14.07.2022 for mining lease for Rough stone and Gravel Quarry at 672/3, 674, 675/2, 676/3 over an area of 2.28.0 Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu.

The prescribed TOR is complied with and incorporated in the EIA Report and submitted. This report is based on the information and data obtained from Approved Mining Plan, other records and data from the field study by CEC. The data generated and given in the EIA/EMP Report are factually correct. The sample analyses are carried out through CEC's laboratory.

(P. Giri)

Chief Executive & EIA Coordinator

**Creative Engineers & Consultants**



Annexure – VII

**Declaration by Experts contributing to the EIA Report for**

**Rough stone and Gravel Quarry of Thiru S.Ramachandran at 672/3, 674, 675/2, 676/3 over an area of 2.28.0Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu**

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator:


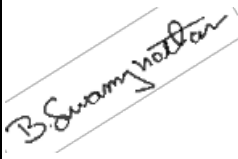
Name: **P.Giri**

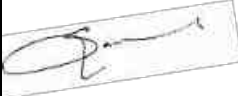
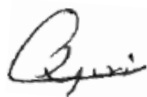



Signature and Date: 

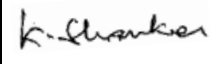
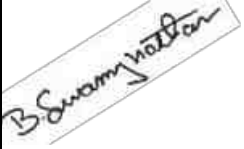


Period of involvement: **May 2022 onwards**



Contact information: **09444133619**

Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	P.Giri	<ul style="list-style-type: none"> <li>• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards.</li> <li>• Identification of sources of air pollution comprising dust, gaseous emission due to mining &amp; other activities</li> <li>• Identification of Impacts &amp; suggestion of mitigation measures</li> </ul> <b>Period: May 2022 onwards</b>	
		B.Swamynathan	<ul style="list-style-type: none"> <li>• Data interpretation of Micro meteorological data for wind rose.</li> <li>• Identification of polluting source and suggestion of suitable mitigation measures.</li> </ul> <b>Period: December 2022 onwards</b>	

2	WP*	G.Sandhya	<ul style="list-style-type: none"> <li>• Study of the monitored data with respect to the applicable standards.</li> <li>• Identification of Water requirement &amp; Source</li> <li>• Preparation of water balance diagram</li> <li>• Identification of Water polluting sources</li> <li>• Impact of the project on the water quality, both surface and groundwater</li> <li>• Suggestion of Mitigation measures to control water pollution</li> </ul> <p>Period: December 2022 onwards</p>	
3	SHW*	P.Giri	<ul style="list-style-type: none"> <li>• Quantification of mineral &amp; waste from mining operation</li> <li>• Waste disposal method evaluation</li> <li>• Providing dump management plan</li> <li>• Providing Surface Runoff Management Structure Requirements.</li> <li>• Identification of Hazardous waste and its details of disposal</li> </ul> <p>Period: May 2022 onwards</p>	
4	SE*	R.Baburaj	<ul style="list-style-type: none"> <li>• Identification of villages in the study area and finalization of demographic profile of the villages within the study area.</li> <li>• Preparation of sections relevant to SE functional area in the EIA/EMP report</li> </ul> <p>Period: December 2022 onwards</p>	
5	EB*	B.Swamynathan	<ul style="list-style-type: none"> <li>• Perusal of existing data relevant to this project.</li> <li>• Studying the details of flora and fauna, separately for core, buffer zone and forest area based on primary field survey.</li> <li>• Identification of species , Indicating the Schedule of the fauna present in the study area</li> <li>• Assessment of impact on Biological environment and suggestion of mitigative measures</li> <li>• Collecting &amp; providing details of existing and proposed Green belt development /plantation in the core zone</li> </ul> <p>Period: December 2022 onwards</p>	
6	HG*	K.Shankar	<ul style="list-style-type: none"> <li>• Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures</li> </ul>	

			<ul style="list-style-type: none"> <li>• Perusal of site specific ground water table details for the core zone and the study area.</li> <li>• Studied the hydrological aspects of surface and groundwater in study area</li> <li>• Study about impact on the hydrology due to mining operation</li> <li>• Suggesting mitigative measures like RWH for enhancement of ground water level</li> </ul> <p>Period: December 2022 onwards</p>	
7	GEO*	K.Shankar	<ul style="list-style-type: none"> <li>• Study of geology of the ML area and the surrounding areas.</li> <li>• Provide details about Mineral composition</li> </ul> <p>Period: December 2022 onwards</p>	
8	SC*	B.Swamynathan	<ul style="list-style-type: none"> <li>• Study of soil profile</li> <li>• Assessment of Impact on soil and suggesting plantation scheme.</li> </ul> <p>Period: December 2022 onwards</p>	
9	AQ*	G.Sandhya	<ul style="list-style-type: none"> <li>• Quantification of emission particulars</li> <li>• Air quality modelling for post project impact on the air quality prediction of the study area.</li> </ul> <p>Analysis of the Isopleth generated</p> <ul style="list-style-type: none"> <li>• Arriving at the post project concentration at the AAQ monitoring locations</li> <li>• Preparation of meteorological data in suitable form for input into the model</li> <li>• Simulation of model for generation of Isopleth and data interpretation.</li> <li>• Studying the impact on AAQ monitoring locations due to the generated emissions.</li> <li>• Preparation of sections relevant to AQ functional area in the EIA/EMP report.</li> </ul> <p>Period: December 2022 onwards</p>	
10	NV*	P.Giri	<ul style="list-style-type: none"> <li>• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards.</li> <li>• Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation.</li> <li>• Suggesting the Mitigation measures to control noise pollution, Suggesting the Mitigation measures to</li> </ul>	

			<p><b>control ground vibration</b>  <b>Period: May 2022 onwards</b></p>	
11	LU	B.Swamynathan	<ul style="list-style-type: none"> <li>• Collection of Remote sensing satellite data to study the land use pattern.</li> <li>• Primary field survey and limited field verification</li> <li>• Preparation of Land use map using Satellite data of the project area separately for the core zone and the buffer zone and providing the land use pattern.</li> </ul> <p><b>Period: December 2022 onwards</b></p>	
12	RH*	K.Shankar	<ul style="list-style-type: none"> <li>• Identified Major risks involved in the project</li> <li>• Mitigation measures suggested to avoid risk.</li> <li>• Preparation of onsite and offsite emergency management plan</li> </ul> <p><b>Period: December 2022 onwards</b></p>	

\*One TM against each FAE may be shown

\*\*Please attach additional sheet if required

**Declaration by the Head of the accredited consultant organization/ authorized person**

I, **P.Giri** hereby,confirm that the above mentioned experts prepared the EIA report for **Rough stone and Gravel Quarry of Thiru S.Ramachandran at 672/3, 674, 675/2, 676/3 over an area of 2.28.0Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu**

I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information. It is certified that no unethical practices, plagiarism involved in carrying out the work and external data / text has not been used without proper acknowledgement while preparing this EIA report.

Signature:



Name: **P.Giri**

Designation: **Chief Executive**

Name of the EIA consultant organization: **Creative Engineers & Consultants, Chennai – 59**

NABET Certificate No. & Issue Date: **No- NABET/EIA/2023/SA 0187 & date 30.01.2023**



## National Accreditation Board for Education and Training



### Certificate of Accreditation

**Creative Engineers and Consultants,**  
9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
2	Thermal power plants	4	1 (d)	A
3	Mineral beneficiation	7	2 (b)	A
4	Cement Plants	9	3 (b)	A

**Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated Oct 4, 2022 posted on QCI-NABET website.**

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/23/2653 dated January 30, 2023. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, following due process of assessment.

Sr. Director, NABET  
Dated: January 30, 2023

Certificate No.  
NABET/EIA/2023/SA 0187

Valid up to  
December 23, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.







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THIRU.DEEPAK S.BILGI, I.F.S.  
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT  
ASSESSMENT AUTHORITY-TAMILNADU  
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Chennai - 600 015.  
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**TERMS OF REFERENCE (ToR)**

**Lr No.SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022 Dated :14.07.2022**

To

Thiru. S. Ramachandran  
S/o. Sundar reddyar  
1/28, North Street  
Ethirkottai  
Vembakottai Taluk  
Virudhunagar - 626131


**Sir / Madam,**

**Sub:** SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough stone and gravel quarry lease over an extent of 2.28.0 Ha at S.F.Nos. 672/3, 674, 675/2 & 676/3, Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu by Thiru. S. Ramachandran - under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing-preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No. SIA/TN/MIN/ 77000/2022, dated: 18.05.2022
  2. Your application seeking Terms of Reference submitted on: 20.05.2022
  3. Minutes of the 287<sup>th</sup> Meeting of SEAC held on 22.06.2022
  4. Minutes of the 532<sup>th</sup> Meeting of SEIAA held 14.07.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

The project proponent, Thiru. S. Ramachandran has submitted application seeking ToR for B1 category project in Form-I, for the Proposed Rough stone and gravel quarry lease over an extent

  
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of 2.28.0 Ha at S.F.Nos. 672/3, 674, 675/2 & 676/3 Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu and has furnished Pre-feasibility report.

**Discussion by SEAC and the Remarks:-**

**Proposed Rough Stone & Gravel quarry lease over an extent of 2.28.0 Ha at S.F.No. S.F.No. 672/3, 674, 675/2 & 676/3, Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu by Thiru. S. Ramachandran for Terms of Reference (SIA/TN/MIN/77143/2022, 21.05.2022)**


The proposal was placed in this 287<sup>th</sup> Meeting of SEAC held on 22.06.2022. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

The SEAC noted the following


1. The Project Proponent, Thiru. S. Ramachandran has applied for Terms of Reference for the Rough Stone & Gravel quarry lease over an extent of 2.28.0 Ha at S.F.No. S.F.No. 672/3, 674, 675/2 & 676/3, Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu.
2. The proposed quarry/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan the lease period is 10 years. The mining plan is for the period of five years & production should not exceed 239140 cu.m of rough stone, 31264Cu.m of Weathered Rock & 46896 Cu.m of Gravel. The annual peak production is 63035 cu.m of rough stone(4<sup>th</sup> year), 14036Cu.m of Weathered Rock (1<sup>st</sup> year) & 21054 Cu.m of Gravel(1<sup>st</sup> year) The ultimate depth is 25 m BG.

Based on the presentation made by the proponent SEAC recommended to grant of Terms of Reference (TOR) with Public Hearing is issued, subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The PP shall furnish the letter from Thasildhar stating the details of Fire Works units located within 300m radios from the proposed site.
2. The PP shall conduct a survey with respect to the permanent structures located within 300m from the project site and the same shall be included in EIA Report.

  
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3. The PP shall submit a letter received from DFO concerned stating the proximity details of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
4. The PP shall carry out Hydro Geological study and the same shall be included in EIA report.
5. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
6. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
7. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
8. **The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.**
9. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
10. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
  - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
  - b. Quantity of minerals mined out.
  - c. Highest production achieved in any one year
  - d. Detail of approved depth of mining.
  - e. Actual depth of the mining achieved earlier.

  
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- f. Name of the person already mined in that leases area.
  - g. If EC and CTO already obtained, the copy of the same shall be submitted.
  - h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
11. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
  12. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
  13. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
  14. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
  15. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
  16. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
  17. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
  18. The Proponent shall carry out the Cumulative impact study due to mining operations carried

  
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- out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
19. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
  20. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
  21. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
  22. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
  23. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
  24. Impact on local transport infrastructure due to the Project should be indicated.
  25. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
  26. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
  27. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC

  
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- accordingly.
28. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
  29. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
  30. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
  31. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
  32. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
  33. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
  34. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
  35. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
  36. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

  
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37. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
38. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
39. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
40. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
41. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.

Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

  
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**Appendix - I**  
**List of Native Trees Suggested for Planting**

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	வில்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றுமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆத்தி
7	<i>Bauhinia tomentos</i>	Iruvathi	இருவாந்தி
8	<i>Buchanania axillaris</i>	Kattuna	காட்டுமர
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புள்ளை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon swietenia</i>	Purasamaram	பூசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவுளி
18	<i>Creteva adansonii</i>	Mavalingum	மாலைலங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உசா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உசா
21	<i>Diospyro sebenum</i>	Karungali	கருங்காலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amplissima</i>	Kalltchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்புலக
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Larnea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	விலா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	அரம்பா, பிசிண்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	எச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

  
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40	<i>Premna mollissima</i>	Murnai	முன்னை
41	<i>Premna serratifolia</i>	Narumunnai	நறு முன்னை
42	<i>Premna tomentosa</i>	Malaiipoovarasu	மலை புவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வள்ளி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வெண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிப்புங்கன் சோப்புக்காய்
50	<i>Saraca asoca</i>	Asoca	அசோகா
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தான் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாண்ட்ரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	புவரசு
59	<i>Walsuratrifoliata</i>	valsura	வால்சுரா
60	<i>Wrightia tinctoria</i>	Veppalai	வெப்பாலை
61	<i>Pithecollobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

#### **Discussion by SEIAA and the Remarks:-**

The proposal was placed in the 532<sup>nd</sup> Authority meeting held on 14.07.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

1. Restricting the ultimate depth of mining upto 20m and quantity of 1,97,455cu.m of Rough stone, 46,896 cu.m of Gravel & 31264 cu.m of Weathered Rock are permitted for mining over a period of five years considering the environmental impacts due to the mining, safety precautionary measures of the working personnel and following the principle of the sustainable mining.

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2. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
3. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological structures etc.
4. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
5. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
6. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
7. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
8. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
9. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
10. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
11. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
12. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
13. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
14. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
15. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

  
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16. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
17. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
18. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
19. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
20. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
  - a) Soil health & bio-diversity.
  - b) Climate change leading to Droughts, Floods etc.
  - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
  - d) Possibilities of water contamination and impact on aquatic ecosystem health.
  - e) Agriculture, Forestry & Traditional practices.
  - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
  - g) Bio-geochemical processes and its foot prints including environmental stress.
  - h) Sediment geochemistry in the surface streams.
22. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.

  
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23. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
24. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
25. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
26. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.


#### **A. STANDARD TERMS OF REFERENCE**

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment

  
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Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

  
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- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).


  
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- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.


  
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- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be

  
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included in the EIA Report.

- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
  - a) Executive Summary of the EIA/EMP Report
  - b) All documents to be properly referenced with index and continuous page numbering.

  
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- c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
- d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
- e) Where the documents provided are in a language other than English, an English translation should be provided.
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

**In addition to the above, the following shall be furnished:-**

**The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:**

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and

  
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solid and hazardous wastes.

3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.

  
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20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

**Besides the above, the below mentioned general points should also be followed:-**

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.

  
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e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2<sup>nd</sup> December, 2009, 18<sup>th</sup> March 2010, 28<sup>th</sup> May 2010, 28<sup>th</sup> June 2010, 31<sup>st</sup> December 2010 & 30<sup>th</sup> September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29<sup>th</sup> August, 2017.

  
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**Copy to:**

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Virudhunagar District.
7. Stock File.





**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**TOR COMPLIANCE**

<b>S.No</b>	<b>ToR Points</b>	<b>Reply</b>	<b>Pg.No</b>
<b>A. ToR in Addition to Standard ToR</b>			
1.	The PP shall furnish the letter from Thasildhar stating the details of Fire Works units located within 300m radius from the proposed site.	Under process	--
2.	The PP shall conduct a survey with respect to the permanent structures located within 300m from the project site and the same shall be included in EIA Report.	Village Map has been enclosed as Figure No.2.5, Chapter-II.	2-8
3.	The PP shall submit a letter received from DFO concerned stating the proximity details of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Under process	--
4.	The PP shall carry out Hydro Geological study and the same shall be included in EIA report.	Hydrogeological studies is provided under Section 3.6, Chapter-III.	3-36
5.	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.	Quarrying in this lease area was earlier carried out for the period of 03.11.2003 to 02.11.2008 with the proceeding no. KV1/2214/2003 dated 03.10.2003. Letter has been obtained from Assistant Director, Geology & Mining, Virudhunagar vide Roc.No.KV1/664/2021 dated 17.03.2022 regarding the lease period, quantity mined and the depth of mining. (Annexure-3) Pit slope stability plan is provided under Section 7.7, Chapter-VII.	2-11 7-7
6.	The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	The proposed depth of mining as per approved mining plan was 25m. However based on SEIAA recommendation, the depth of mining has been reduced to 20m.	2-11
7.	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster,	Under process	--



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

	mining mate, mine foreman, Iyl Class mines manager appointed by the prponent.		
8.	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blasting site.	The various measures planned to reduce ground vibrations dues to blasting is provided under Section 4.4.2, Chapter-IV.	4-14
9.	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in tie same location or elsewhere in the State with video and photographic evidences.	Agreed	--
10.	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? b) Quantity of minerals mined out. c) Highest production achieved in any one year d) Detail of approved depth of mining. e) Actual depth of the mining achieved earlier. f) Name of the person already mined in that leases area. g) If EC and CTO already obtained, the copy of the same shall be submitted. Whether the milling was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Letter has been obtained from Assistant Director, Geology & Mining, Virudhunagar vide Roc.No.KV1/664/2021 dated 17.03.2022 regarding the lease period, quantity mined and the depth of mining. (Annexure-3)	A-X
11.	All comer coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology ofthe mining lease area should be provided. Such an Imagery ofthe proposed area should	<ul style="list-style-type: none"> <li>•Project coordinates superimposed in satellite imagery and given as Figure No - 2.6 – 2.8 in Chapter – II.</li> <li>•The geology and geomorphology map is provided in Figure No.3.21, 3.22, Chapter-III. The Lithology map and Soil map are</li> </ul>	2-6  3-38



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

	clearly show the land use and other ecological features of the study area (core and buffer zone).	provided under Figure No. 3.23, 3.24, Chapter-III.  The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III.	3-1
12.	The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,	Will be carried out	--
13.	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Site photographs is provided in Chapter-II. Based on the conditions of Precise Area Communication letter, a safety distance of 10m for cart track and 7.5m safety distance has been left for the adjoining patta lands.	2-6
14.	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	<ul style="list-style-type: none"> <li>•The details of geological and mineable reserves are provided in Table No.2.3, Chapter-II.</li> <li>•The process flow diagram is provided in Table No.2.8, Chapter-II.</li> <li>•The production schedule during the plan period is provided in Table No.2.7, Chapter-II.</li> </ul>	2-10  2-11  2-12
15.	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent person to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	The organization chart has been provided in Figure No.10.1, Chapter-X.	10-3
16.	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-36



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	data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.		
17.	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Winter Season (December 2022 to February 2023) and detailed in Section 3.3 to 3.5 of Chapter-III. The details of Traffic Study is provided under Section 4.9, Chapter-IV.	3-14 4-24
18.	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	<ul style="list-style-type: none"> <li>The details of other quarries located in 500m radius of the project is provided in Annexure-3. The baseline monitoring carried out for this project reflects the cumulative impact of this existing quarry.</li> <li>The identification of impact due to air, water, health impacts etc. has been carried out in Chapter-IV. The environmental management plan has been provided elaborately in Chapter-X.</li> </ul>	4-1 10-1
19.	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The non-monsoon water requirement for this project will be 10.0 KLD and the monsoon quantity will be 5.0 KLD. The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.	2-13
20.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	<ul style="list-style-type: none"> <li>The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III.</li> <li>The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV.</li> </ul> <p>The post mining land use has been provided in Table No. 4.14. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5.</p>	3-27 4-16



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21.	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Besides, there is no proposal for overburden dump outside the lease area.	2-12
22.	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Not applicable	--
23.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	<ul style="list-style-type: none"> <li>• The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.</li> <li>• Towards surface runoff management, a garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.3, Chapter-IV.</li> <li>• The methods for reducing water consumption and rainwater harvesting is provided in section 4.3.4, Chapter-IV.</li> </ul>	4-9
24.	Impact on local transport infrastructure due to the Project should be indicated.	From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. Details of the traffic study is provided under section 4.9, Chapter-IV.	4-24
25.	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied	The details of flora in the core zone and the buffer zone are provided from Table No.3.24–3.25, Chapter-III.	3-32



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	area & 300m buffer zone and its management during mining activity.		
26.	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
27.	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF&CC accordingly	This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1
28.	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Agreed	--
29.	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	Agreed	--
30.	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-32
31.	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University and local	In the lease area, safety barrier 7.5m is left as safety zone. Greenbelt / Plantation will be carried out in and around the lease area to enhance the vegetative growth and aesthetic in the area. Details are given in Table No.4.16, Chapter-IV.	4-20



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	school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.		
32.	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper espacement as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	Agreed	--
33.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan has been provided under section 7.4, Chapter-VII.	7-1
34.	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.	Details about Risk Assessment has been provided under section 7.2, Chapter-VII.	7-2
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-23
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	<ul style="list-style-type: none"> <li>• Details of the socio economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III.</li> <li>• Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted.</li> </ul>	3-8
37.	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-	<ul style="list-style-type: none"> <li>• Nearby villages were visited for conducting study to know about socio-economic</li> </ul>	3-8



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	economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	conditions, including aspirations and requirements of the people for a better living and collected relevant data. The details are provided under section 3.2.4, Chapter-III.	
38.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	There is no litigation pending against the project.	--
39.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	<ul style="list-style-type: none"> <li>• The proposed Roughstone and Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc.</li> <li>• Direct employment to about 18 people and indirect employment to scores of people.</li> <li>• By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER for all the three projects together. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.</li> </ul>	8-1
40.	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Quarrying in this lease area was earlier carried out for the period of 03.11.2003 to 02.11.2008 with the proceeding no. KV1/2214/2003 dated 03.10.2003. Letter has been obtained from Assistant Director, Geology & Mining, Virudhunagar vide Roc.No.KV1/664/2021 dated 17.03.2022 regarding the lease period, quantity mined and the depth of mining. (Annexure-3)	2-11
41.	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Will be submitted	--





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<b>B. Additional ToR</b>			
<b>1.</b>	Restricting the ultimate depth of mining upto 20m and quantity of 1,97,455cu.m of Rough stone, 46,896 cu.m of Gravel & 31264 cu.m of Weathered Rock are permitted for mining over a period of five years considering the environmental impacts due to the mining, safety precautionary measures of the working personnel and following the principle of the sustainable mining.	The proposed depth of mining as per approved mining plan was 25m. However based on SEIAA recommendation, the depth of mining has been reduced to 20m. The revised production schedule is provided in Table 2.7, Chapter-II.	<b>2-12</b>
<b>2.</b>	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, Water-bodies/ Rivers & any ecological fragile areas.	There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.	<b>4-10</b>
<b>3.</b>	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archeological structures, etc.	Letter has been obtained from VAO and the same is enclosed as Annexure-X of the mining plan.	--
<b>4.</b>	As per the MoEF& CC office memorandum F.No.22_65/2017_IA.III dated: 30.09.2020 and 20.10 2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	<b>Agreed</b>	--
<b>5.</b>	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Considering that the quantum of production is less, only 1 excavator, 4 tippers will be engaged. These equipments will be properly and regularly maintained. Besides, as mentioned earlier, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1150 number of plants will be planted in and around the lease area.	<b>4-3</b>
<b>6.</b>	The Environmental impact Assessment	An ecological survey of the study area was	<b>3-32</b>



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	should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	
7.	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The post mining land use has been provided in Table No. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.4.	4-16
8.	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no major perennial waterbody in close proximity of the lease area.	4-10
9.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	<ul style="list-style-type: none"> <li>• Soil samples were collected in 3 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.19, Chapter-III.</li> </ul> <p>The soil map is provided in Figure No.3.20, Chapter-III.</p>	3-27  3-39
10.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	<ul style="list-style-type: none"> <li>• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.</li> </ul>	3-32
11.	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	<ul style="list-style-type: none"> <li>• Replied in Additional ToR Point No 6.</li> </ul>	--
12.	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	<ul style="list-style-type: none"> <li>• The nearest major water bodies is provided in Table No.3.2, Chapter-III.</li> <li>• There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations</li> <li>• The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The</li> </ul>	3-3  4-10



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		ultimate pit depth of mining is 20m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.	
13.	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	<ul style="list-style-type: none"> <li>• Detailed environmental management plan is provided in Chapter-X.</li> <li>• The environmental management cost is provided under Table No.10.1, Chapter-X.</li> <li>• Disaster management plan is provided under section 7.4.1, Chapter-VII.</li> </ul>	10-1  7-3
14.	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	<ul style="list-style-type: none"> <li>• Considering that the quantum of production is less, only 1 excavator, 4 tippers will be engaged. These equipments will be properly and regularly maintained. Besides, as mentioned earlier, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1150 number of plants will be planted in and around the lease area.</li> </ul>	4-3
15.	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	<ul style="list-style-type: none"> <li>• The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.</li> </ul>	4-17
16.	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	<ul style="list-style-type: none"> <li>• Due to poor soil condition and non-availability of perennial water source, no major agricultural activity is carried out in and around the lease area. Only patches of agricultural activity are observed on the eastern periphery of the study area along the river sides in few places in the monsoon season based on water availability. Coconut farms are seen the study area.</li> </ul>	4-18



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17.	The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.	<ul style="list-style-type: none"> <li>•The post mining land use has been provided in Table No. 4.17. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.4.</li> </ul>	4-17
18.	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	<ul style="list-style-type: none"> <li>•An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.</li> <li>•The land use pattern details are provided under section 4.5.1, Chapter-IV.</li> <li>•Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area.</li> </ul>	3-32  4-20
19.	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	<ul style="list-style-type: none"> <li>•Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.</li> </ul>	4-26
20.	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	There are no reserve forests in the 10Km radius. Details of impact on biological environment is provided under section 4.6.2, Chapter-IV.	4-17
21.	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following a) Soil health & bio-diversity. b) Climate change leading to Droughts, Floods etc. c) Pollution leading to release of Greenhouse gases (GI-IG), rise in Temperature, & Livelihood of the local people.	The impact of mining on biological environment is covered under Table 4.15, Chapter-IV.	4-17



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	<p>d) Possibilities of water contamination and impact on aquatic ecosystem health.</p> <p>e) Agriculture. Forestry &amp; Traditional practices.</p> <p>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</p> <p>g) Bio-geochemical processes and its foot prints including environmental stress.</p> <p>h) Sediment geochemistry in the surface streams.</p>		
<b>22.</b>	<p>Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p>	<p><b>Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.</b></p>	<b>3-36</b>
<b>23.</b>	<p>To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards &amp; to cope with disaster/untoward accidents in &amp; around the proposed mine lease area due to the proposed method of mining activity &amp; its related activities covering the entire mine lease period as per precise area communication order issued.</p>	<p><b>The disaster management plan has been provided under section 7.4.1, Chapter-VII.</b></p>	<b>7-3</b>
<b>24.</b>	<p>To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p>	<p><b>Details about Risk Assessment has been provided under section 7.3, Chapter-VII.</b></p>	<b>7-1</b>
<b>25.</b>	<p>Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p>	<p><b>Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.</b></p>	<b>7-4</b>



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<b>C. Standard ToR</b>			
<b>1</b>	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is a proposed project. No mining has been carried out in this lease area so far by the proponent.	2-12
<b>2</b>	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	Precise area communication letter was obtained from the District Collector Virudhanagar Vide KV1/664/2021-kaniyamam dated:11.02.2022.	A-1
<b>3</b>	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	The production capacity, quantity of waste, its management and mining technology in mine plan and EIA, etc., are compatible with one another.	--
<b>4</b>	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	<ul style="list-style-type: none"> <li>•Project coordinates superimposed in satellite imagery and given as Figure No - 2.4 in Chapter – II.</li> <li>•The geology and geomorphology map is provided in Figure No.3.18, 3.19 Chapter-III. The Lithology map and Soil map are provided under Figure No. 3.20, 3.21, Chapter-III.</li> </ul> <p>The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III.</p>	<p>2-6</p> <p>3-38</p> <p>3-39</p> <p>3-2</p>
<b>5</b>	Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and	Replied in Standard ToR point no.4	--



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	rivers and soil characteristics.		
<b>6</b>	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	<b>Not Applicable</b>	--
<b>7</b>	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	<ul style="list-style-type: none"> <li>•The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.2.1, Chapter-X.</li> <li>•The Mines Manager will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided in Figure No.10.1, Chapter-X.</li> </ul>	<p>10-1</p> <p>10-3</p>
<b>8</b>	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Various risks likely to arise due to mining activities are detailed under section 7.4, Chapter-VII. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.3.2, Chapter-IV.	<p>7-4</p> <p>4-14</p>
<b>9</b>	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should	The study area chosen for collecting existing environmental status covers 10 km radial distance from the project periphery (Figure No - 3.1). Data given in the report is	3-2



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	be for the life of the mine / lease period.	for the life of the mine.	
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	<ul style="list-style-type: none"> <li>• The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III.</li> <li>• The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV.</li> <li>• The post mining land use has been provided in Table No. 4.14. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5.</li> </ul>	3-32  4-17
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Besides, there is no proposal for overburden dump outside the lease area.	2-12
12	Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	There is no forest land in the lease area.	--
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A	There is no forest land in the lease area.	--





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	copy of the forestry clearance should also be furnished.		
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable	--
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no forest land in the lease area.	--
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	4-17
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	Replied in Standard ToR point No.16	--
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-32



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	Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.		
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable	--
20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable	--
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation	The mining activities will be carried out within the mine lease area only. The entire mine lease area is a patta land in proponent's possession. There is no	7-4



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	<p>&amp;Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&amp;R and socio-economic aspects should be discussed in the Report.</p>	<p>population within the ML area. Hence, the question of R&amp; R does not arise.</p>	
22	<p>One season (non-monsoon) (i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season) primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<ul style="list-style-type: none"> <li>• The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora &amp; fauna are collected during Winter Season (December 2022 to February 2023) and detailed in para 3.3 to 3.5 of Chapter-III.</li> <li>• Monitoring stations were selected taking into account, wind direction and location of sensitive receptors.</li> <li>• Free silica composition in PM10 sample has been done and the values are found to be Below Detectable Limit (DL 0.05mg/m3) which is well within the prescribed limit of 5mg/m3.</li> </ul>	3-14
23	<p>Air quality modeling should be carried out for prediction of impact of the project on</p>	<ul style="list-style-type: none"> <li>• Air quality modeling details are furnished in para 4.2.2 and its continuous sub paras</li> </ul>	4-3



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	<p>the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing predominant wind direction may also be indicated on the map.</p>	<p>in Chapter-IV of EIA report.</p> <ul style="list-style-type: none"> <li>• The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion.</li> <li>• The model simulations are done for the air pollutant arising from the mining operations, namely, PM10, PM2.5. Ground Level Concentration (GLC) have been computed using hourly meteorological data.</li> <li>• The Isopleths of PM10, PM2.5 concentrations for with control measures scenario have also been drawn and these are given in Figure No.4.1 and 4.2.</li> <li>• It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM10 are within the statutory limits in each case.</li> </ul>	
24	<p>The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p>	<p>The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.3.</p>	4-8
25	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p>	<p>Not Applicable.</p>	--
26	<p>Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the</p>	<ul style="list-style-type: none"> <li>• The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping</li> </ul>	4-9



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	Project, if any, should be provided.	<p>along with discharge, before outlet. etc.</p> <ul style="list-style-type: none"> <li>• Towards surface runoff management, a garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.3, Chapter-IV.</li> <li>• The methods for reducing water consumption and rainwater harvesting is provided in section 4.3.4, Chapter-IV.</li> </ul>	
27	Impact of the Project on the water quality, both surface and groundwater. should be assessed and necessary safeguard measures, if any required, should be provided.	<ul style="list-style-type: none"> <li>• There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.</li> <li>• The ultimate pit depth of mining is 20m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.</li> </ul>	4-10
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be	<ul style="list-style-type: none"> <li>• The ultimate pit depth of mining is 20m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.</li> <li>• Details of hydro geological study are given in Para 3.6.2 Chapter – III.</li> </ul>	4-10  3-36



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	obtained and copy furnished.		
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Replied above in Standard ToR point No.27.	--
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	<ul style="list-style-type: none"> <li>• The area applied for mining lease is a gentle plain terrain.</li> <li>• The ultimate pit depth of mining is 20 m. The ground water table in this area is below this level.</li> </ul>	2-2 4-10
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the. Project. Phasc-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	In the lease area, safety barrier 7.5m is left as safety zone. Greenbelt / Plantation will be carried out in and around the lease area to enhance the vegetative growth and aesthetic in the area. Details are given in Table No.4.16, Chapter-IV.	4-20
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling	From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. Details of the traffic study is provided	4-24



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	the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	under section 4.9, Chapter-IV.	
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	2-15
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	The post mining land use has been provided in Table No. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.4.	4-17
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-23
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations	<ul style="list-style-type: none"> <li>• Details of the socio-economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III.</li> <li>• Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted.</li> </ul>	3-9
37	Measures of socio economic significance and influence to the local community	Nearby villages were visited for conducting study to know about socio-economic	3-8



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	proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	conditions, including aspirations and requirements of the people for a better living and collected relevant data. The details are provided under section 3.2.4, Chapter-III.	
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Detailed environmental management plan is provided in Chapter-X.	10-1
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1
40	Details of litigation pending against the project, if any, with direction /order paced by any Court of Law against the Project should be given.	<ul style="list-style-type: none"> <li>There is no litigation pending against the project.</li> </ul>	--
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	<ul style="list-style-type: none"> <li>The cost of the project is Rs. 77,28,230 /- Towards EMP measures, Rs.20.48 Lakhs is allocated under capital cost. Besides, Rs.17.89 lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue.</li> </ul>	11-15
42	A Disaster management Plan shall be prepared and included in the EIA/EMP	The disaster management plan has been	7-3





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	Report.	provided under section 7.4, Chapter-VII.	
<b>43</b>	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	<ul style="list-style-type: none"> <li>• The proposed Roughstone and Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc.</li> <li>• Direct employment to about 14 people and indirect employment to scores of people.</li> <li>• By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER for all the three projects together. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.</li> </ul>	<b>8-1</b>

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 PURPOSE OF THE REPORT:**

Thiru. S.Ramachandran proposes to operate a **Rough Stone and Gravel Quarry** Survey No. at 672/3, 674, 675/2 and 676/3 over an area of 2.28.0 Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu and has initiated action towards obtaining environmental clearance.

It is proposed to mine 1,97,455 m<sup>3</sup> of Roughstone and 46,896 m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 20m as per approved ToR as against the mining plan approved quantity of 2,39,140 m<sup>3</sup> of Roughstone and 46,896 m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 25m.

Although the individual lease area of this project is less than 5 Ha, the other existing quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing. The details of the quarries located within the 500m radius of the project is given vide **Annexure-3**. A cumulative impact study has been carried out and furnished in **Para 7.3, Chapter-VII**.

This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide letter no. SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022 dated 14.07.2022 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

#### **1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT:**

**Table 1.1 Identification of project**

1	<b>Project Name</b>	Rough Stone and Gravel Quarry of Thiru. S. Ramachandran
2	<b>Extent</b>	2.28.0Ha
3	<b>Production</b>	Roughstone - 1,97,455 m <sup>3</sup> Gravel - 46,896 m <sup>3</sup> Weathered Rock - 31,264 m <sup>3</sup>
4	<b>Ultimate Depth</b>	20m



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5	<b>Land Classification</b>	Patta land owned by the applicant
6	<b>Location</b>	<b>Survey Number:</b> 672/3, 674, 675/2 and 676/3
		<b>Village:</b> Ethirkottai
		<b>Taluk:</b> Vembakottai
		<b>District:</b> Virudhunagar
		<b>State:</b> Tamil Nadu

**Table 1.2: Identification of Project Proponent**

1	<b>Proponent Name</b>	Thiru. S.Ramachandran
2	<b>Address</b>	1/28, North Street, Ethirkottai Post, Vembakottai Taluk, Virudhunagar– 626131.
3	<b>Contact Number</b>	984213574
4	<b>Email-ID</b>	r4machandran.s@yandex.com

The Proponent can meet the requirement the financial requirement of this project and will ensure that the mining activities are carried out as per statutory requirements.

**Table 1.3: Statutory Approvals**

S.No	Statutory Approval	Authority	Letter Number and Date	Reference
1.	<b>Precise Area Communication Letter</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	KV1/664/2021-kaniyamam dated:11.02.2022	<b>Annexure-1</b>
2.	<b>Mining Plan Approval</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	Rc. KV1/664/2021-kaniyamam, dated 11.02.2022.	<b>Annexure-2</b>
3.	<b>Details of other quarries within 500m radius</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	Roc. KV1/664/2021-kaniyamam, dated 17.03.2022	<b>Annexure-3</b>

Based on the conditions of Precise Area Communication letter, a safety distance of 10m for cart track and 7.5m safety distance has been left for the adjoining patta lands.

**1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION & PROJECT IMPORTANCE**

**Table 1.4: Brief Description of Nature of project**

1.	<b>Sector</b>	1(a), Non-Coal Mining
2.	<b>Type</b>	Fresh Project



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3.	<b>Category</b>	B1 (Cluster Situation)
4.	<b>Mineral Mined</b>	Rough stone, Gravel and Weathered Rock
5.	<b>Major/Minor Mineral</b>	Minor
6.	<b>Mining method</b>	Opencast Semi mechanized Mining
7.	<b>End use</b>	The top gravel will be supplied to customers. The mined out rough stone & weathered rock, will despatched to crushers/other buyers.

**Table 1.5: Location of the project**

S.No	Particulars	Details
1.	<b>Location</b>	Ethirkottai village, Vembakottai Taluk, Virudhunagar District.
2.	<b>Corner Coordinates</b>	<b>Latitude:</b> 9°21'49.3"N to 9°21'56.8"N <b>Longitude:</b> 77°44'23.1"E TO 77°44'28.0"E
3.	<b>Toposheet Number</b>	58 G/11

Location details are elaborated in Para **2.3, Chapter-II.**

### 1.3.1 IMPORTANCE TO THE COUNTRY AND REGION:

Rough stone and Gravel from this quarry will meet the domestic demand. There is good demand for the Gravel & stone aggregate, which is the main requisite for the construction/ infrastructure sector. Gravel quarried from this lease will be directly transported to the nearby end users. The boulders will be marketed to the nearby crushers for producing crusher aggregates.

This project in the area will provide both direct and indirect employment opportunities through allied opportunities in logistics, trading, repairing works etc., improved per capita income for local people, improved social welfare facilities like infrastructural build-up, improvement in facilities due to the proposed CER activities of the proponent etc.

### 1.4 SCOPE OF THE STUDY:

Particulars	Details
<b>Proposal no</b>	SIA/TN/MIN/77000/2022
<b>File no</b>	9271/2022
<b>SEAC meeting for issue of TOR</b>	287 <sup>th</sup> Meeting held on 22.06.2022
<b>SEIAA meeting for issue of TOR</b>	532 <sup>nd</sup> Meeting held on 14.07.2022



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

<b>Terms of Reference</b>	Received from SEIAA, Tamil Nadu vide their Lr No.SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022. Dated:14.07.2022
<b>Baseline Data Collection</b>	Carried out by Creative Engineers & Consultants , Chennai for Summer Season (Dec 2022 to Feb 2023)

Based on the terms of reference, data collection, the Environmental Impact Assessment was carried out for the project area (core zone and the buffer zone (10km radius from the core zone) and the following studies were covered:

- Collection of primary and secondary data relevant to the project.
- One-Season baseline monitoring for environmental parameters such as air, water, noise, soil, flora & fauna, etc. Analysis of parameters in in-house laboratory.
- Documentation of EIA/EMP report with inclusion of relevant studies conducted by other bodies into the EIA/EMP report.
- Identification of significant environmental parameters that are prone to get affected due to pollution. Namely, Air, Water, Noise, Soil, Biological and Land Environment.
- Evaluation and determination of suitable mitigation measures to reduce and control the said pollution.
- Prediction of post project concentration (baseline + incremental) with respect to air environment for core zone and buffer zone.
- Formulation of an Environmental Management plan including administrative aspects for proposed implementation of mitigative measures in time.

This draft EIA/EMP report will be submitted for public consultation, as per rules and procedures in this respect, as per the EIA notification 2006. The opinions, concerns and objections, if any, of the surrounding public and other stake holders connected, will be taken into consideration and compliance report thereon will be submitted to SEIAA, Tamil Nadu in the final EIA/EMP report.

\* \* \* \* \*



## **CHAPTER 2**

### **PROJECT DESCRIPTION**

#### **2.1 TYPE OF PROJECT:**

This proposal involves quarrying of rough stone and gravel by Thiru S.Ramachandran using mechanized opencast method for the lease period of 5 years.

#### **2.2 NEED & JUSTIFICATION FOR THE PROJECT:**

There is a huge demand for construction material and the entire material produced from this quarry will be used in the local construction / infrastructure sector. Considering the following favorable factors it is practically possible to achieve the proposal within the planned period and this proposal is fully justified.

- Availability of good quality proved reserves
- Techno economic viability of the scheme
- Better approachability to the project, availability of logistic facility in proximity to the site
- Economic and Socio Economic Benefits to the region

#### **2.3 LOCATION:**

A brief description of the mining area, along with the location, coordinates, accessibility, etc. has been details below in Table No.2.1.

**Table 2.1: Mine site description**

<b>Location</b>	Ethirkottai village, Vembakottai Taluk, Virudhunagar District.
<b>Survey No.</b>	672/3, 674, 675/2 and 676/3
<b>Coordinates</b>	<b>Latitude:</b> 9°21'49.3"N to 9°21'56.8"N <b>Longitude:</b> 77°44'23.1"E TO 77°44'28.0"E
<b>Nearest Village</b>	Lakshmpuram Village -950m (SW)
<b>Nearest Town</b>	Sivakasi – 13Km (NE)
<b>Nearest Highway</b>	SH-186 (Vembakottai – Rajapalayam) – 1.75Km (SW) SH-183 (Alangulam – Sivakasi) – 3.4Km (W) SH-187(Vembakottai – Sivakasi) – 4.25Km (E)
<b>Nearest</b>	Sivakasi – 12km (NE)

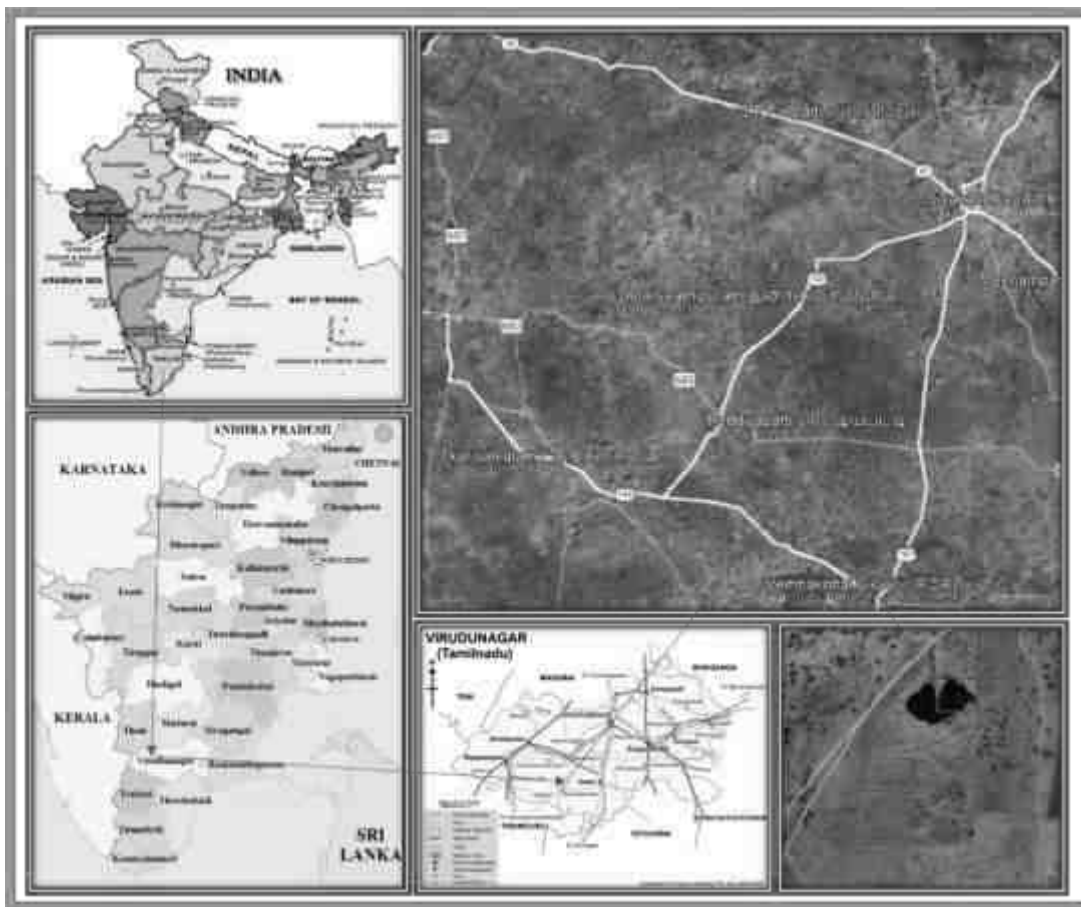


**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

<b>Railway Station</b>	
<b>Nearest Airport</b>	Madurai – 65.0 Km (NE)
<b>Accessibility</b>	The lease area can be approached from M.Madathupatti - Reddiypatti Road on the northern side of the lease area. This connects SH-183(Alangulam – Sivakasi) on the western side of the lease area at a distance of 3.4Km and to SH-187(Vembakottai – Sivakasi) at a distance of 4.25Km on the eastern side. Besides, SH-186 lies at a distance of 1.75Km on the southern side of the lease area.
<b>Topography</b>	Plain terrain, dry lands with scarce vegetation.
<b>Drainage</b>	Kayalkudi River lies at a distance of 1.5Km on the south western side of the lease area.

Location map is provided in **Figure No.2.1**. The approachability map is provided in **Figure No.2.2**. Corner co-ordinates of the lease area and satellite imagery are shown in **Figure No. 2.3 & 2.4** respectively. Village map for 500m radius from the lease is shown in **Figure No. 2.5**.

**Figure 2.1: Location Map**



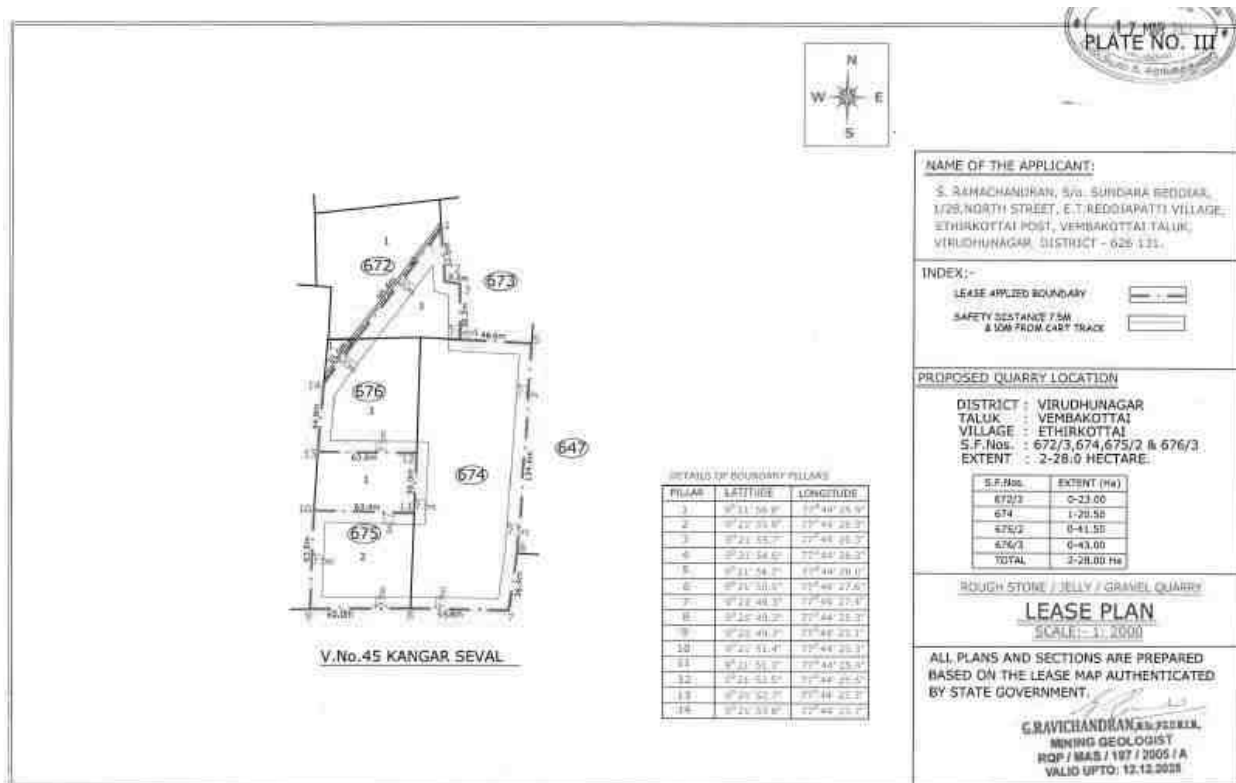


**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 2.2: Approachability Map**



**Figure 2.3: Lease Plan**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 2.4: Satellite Imagery Showing Corner Co-ordinates of the Project Area**



**SITE PHOTOGRAPH**



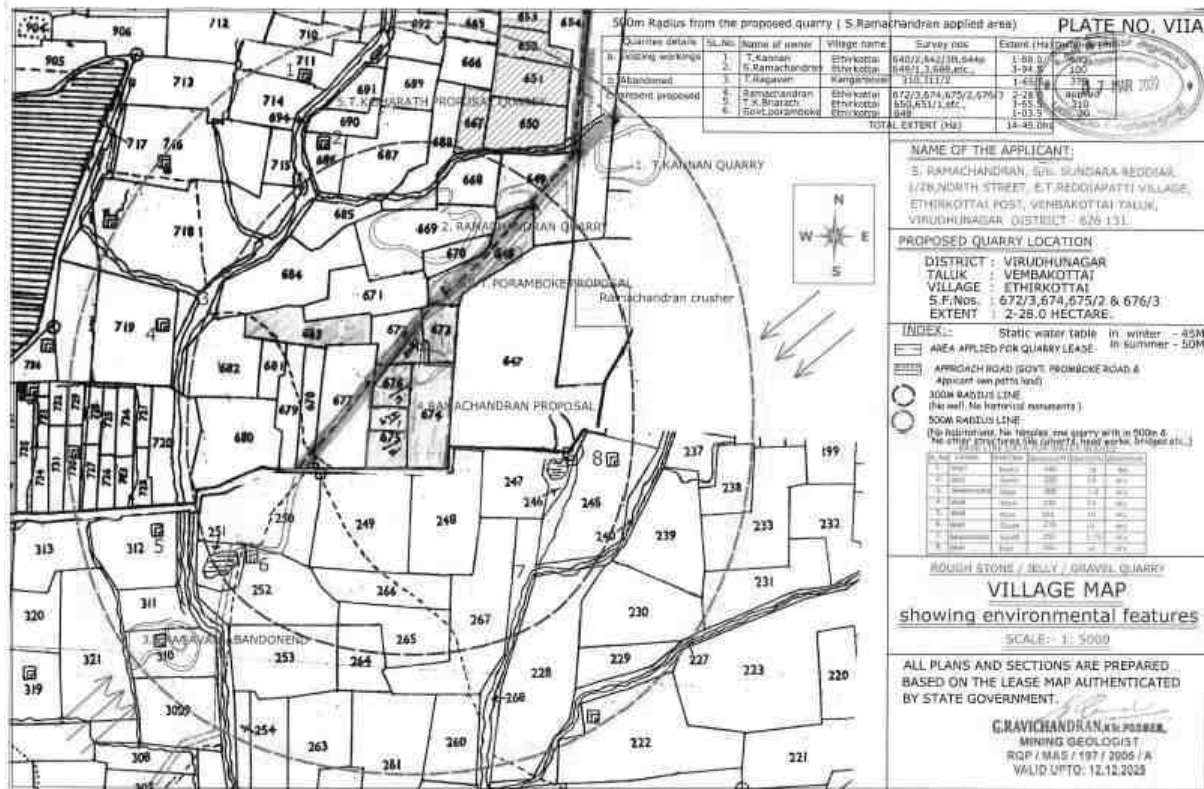
**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

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**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 2.5: Village Map**



**2.4 LAND CLASSIFICATION:**

The lease area of 2.280 Ha is a patta land in the name of the applicant Thiru S.Ramachandra vide Patta No. 388, 1318, 611 (Annexure-IX of Mining Plan). The survey no. wise area breakup has been provided below:

**Table 2.2: Survey Number wise Area Breakup**

S.F. No	Area (Hectare)
672/3	0.230
674	1.205
675/2	0.415
676/3	0.430
<b>Total</b>	<b>2.280</b>

**2.5 GEOLOGY:**

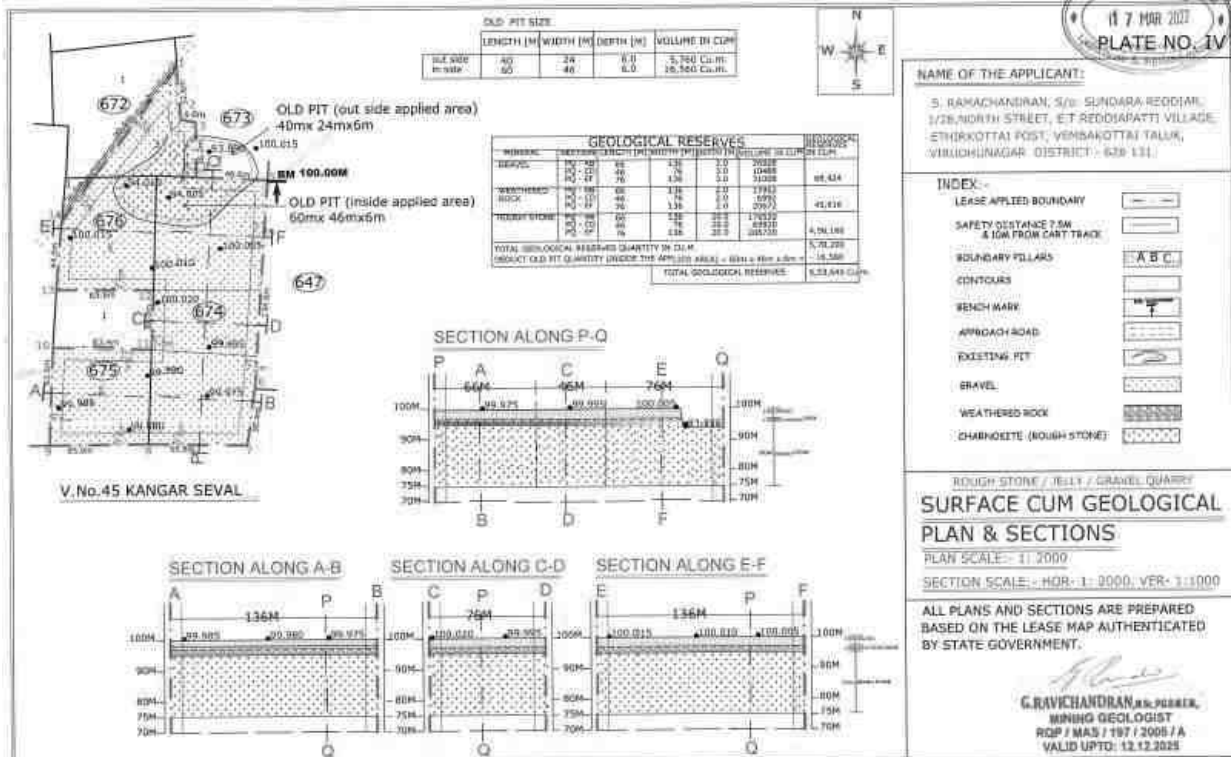
The rocks in this area belonging to ARCHEAN group of rocks. Below the Gravel formation a hard Rough stone Charnockite are noted. The rocks are Phaneric to medium grained nature.



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

And in these rocks there are mineral constituents of BLUE QUARTZ, MICRO CLINE FELDSPAR, HYPERSTHENE and flacks of BIOTITE MICA. The rocks are striking towards North – South direction dipping 80° Vertical towards East-West direction. The strike length of the deposit is 66m with an average width of 136m on southern side, the strike length of the deposit is 46m with an average width of 76m on middle side and the strike length of the deposit is 76m with an average width of 136m on northern side.

**Figure 2.6: Geological Plan & Cross Section**



**2.6 SIZE AND MAGNITUDE OF THE OPERATION:**

- Quarrying in this lease was earlier carried out for the period of 03.11.2003 to 02.11.2008 upto a depth of 6m.
- The proposed mining will be done by open cast semi mechanized mining method.
- Life of mine will be 5 years.
- It is proposed to mine 1,97,455 m<sup>3</sup> of Roughstone and 46,896 m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 20m as per approved ToR as against the mining plan approved quantity of 2,39,140 m<sup>3</sup> of Roughstone and 46,896



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 25m.

- There is no waste generation anticipated in this quarry operation since the entire excavated material will be transported to buyers.

### 2.6.1 RESERVES:

**Table 2.3: Geological and Mineable Reserves**

S. No	Type of reserves	Rough Stone m <sup>3</sup>	Gravel m <sup>3</sup>	Weathered Rock m <sup>3</sup>
1	Mineral resources	456160	68424	45616
2	Mineable Reserves upto 25m	239140	46896	31264
3	Mineable Reserves upto 20m	197455	46896	31264

The mineable reserves is arrived after considering the safety distance of 7.5m peripheral safety distance, 10m safety distance for cart track.

### 2.6.2 MINING METHOD:

Opencast semi mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered.

**Table 2.4: Details of Equipments**

SI. NO	NAME OF THE EQUIPMENT	CAPACITY	REQUIRED
1	Excavator	TATA Hitachi EX200	1
2	Tipper	10 tonnes	6
3	Tractor compressor for drilling	175 CFM	2
4	Dewatering Pump	5 Hp Diesel Pumo	1

### 2.7 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION:

The proponent propose to implement the production immediately after obtaining all the statutory approvals such as CTE, CTO, etc. The proponent will comply with the environmental clearance conditions during mining operations. The schedule of project implementation envisaged for this project is provided below. This is a tentative schedule subject to various factor, hence unforeseen variations may occur.



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

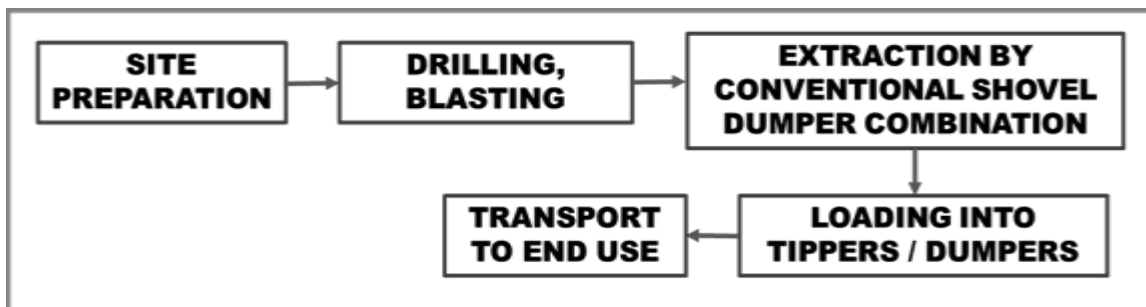
**Table 2.5: Proposed Schedule of Implementation**

Activities	Months					
	Zero Date	1	2	3	4	5
Obtaining Environmental Clearance						
Obtaining Consent from State Pollution Control Board						
Lease Execution						
Equipment mobilization and Commencement of Mining activity after following all the Statutory Requirements						

**2.8 TECHNOLOGY AND PROCESS DESCRIPTION:**

The quarry operations involve shallow jack hammer drilling, blasting, excavation, loading and transportation of Roughstone to buyers. The production of Roughstone in this quarry involves jackhammer drilling and blasting. The primary boulders are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining. The process flow diagram of this project is provided below.

**Figure 2.7: Process Flow Diagram**



**2.9 PROJECT DESCRIPTION:**

**2.9.1 PAST PRODUCTION:**

Quarrying in small part of lease area was earlier carried out for the period of 03.11.2003 to 02.11.2008 with the proceeding no. KV1/2214/2003 dated 03.10.2003.

**Table 2.6: Existing Pit Dimensions**

Length (m)	Width (m)	Depth (m)
60	40	6



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

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Letter has been obtained from Assistant Director, Geology & Mining, Virudhunagar vide Roc.No.KV1/664/2021 dated 17.03.2022 regarding the lease period, quantity mined and the depth of mining. (Annexure-3)

**2.9.2 PLAN PERIOD-PRODUCTION & WASTE DISPOSAL:**

The proposed depth of mining as per approved mining plan was 25m. However based on SEIAA recommendation, the depth of mining has been reduced to 20m. The revised production as per approved ToR has been provided below:

**Table 2.7: Production Schedule During Plan Period**

<b>Year</b>	<b>Roughtone (m3)</b>	<b>Weathered Rock (m3)</b>	<b>Gravel(m3)</b>	<b>Total(m3)</b>
I	29415	14036	21054	64505
II	52530	5612	8418	66560
III	37740	11616	17424	66780
IV	58205			58205
V	19565			19565
	<b>197455</b>	<b>31264</b>	<b>46896</b>	<b>275615</b>

**Waste Disposal during Plan Period:**

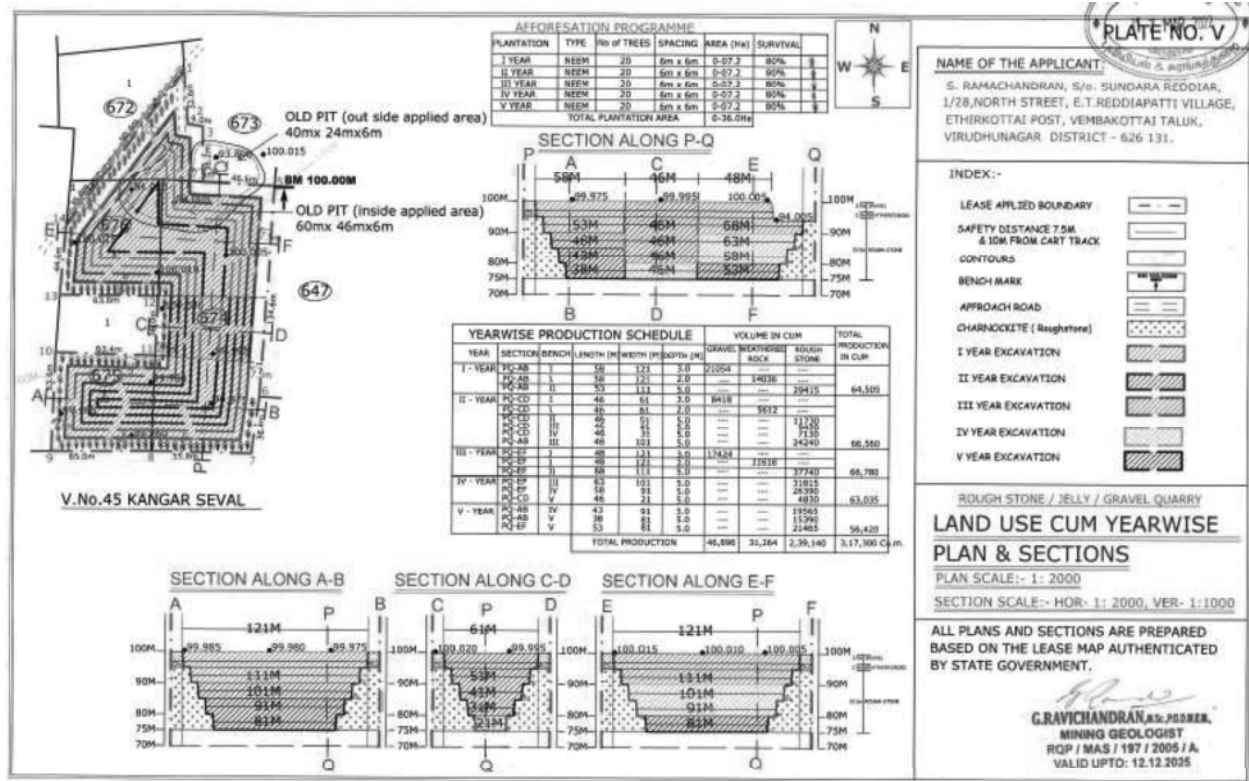
There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. The top overburden in the form of Gravel and weathered rock will be loaded into tipper and marketed to needy customers on payment of necessary Fees to Government. The excavated rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.





**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 2.8: Year wise Plan & Cross Section**



**2.9.3 CONCEPTUAL STAGE:**

The conceptual pit dimensions is provided below:

**Table 2.8: Ultimate Pit Dimensions**

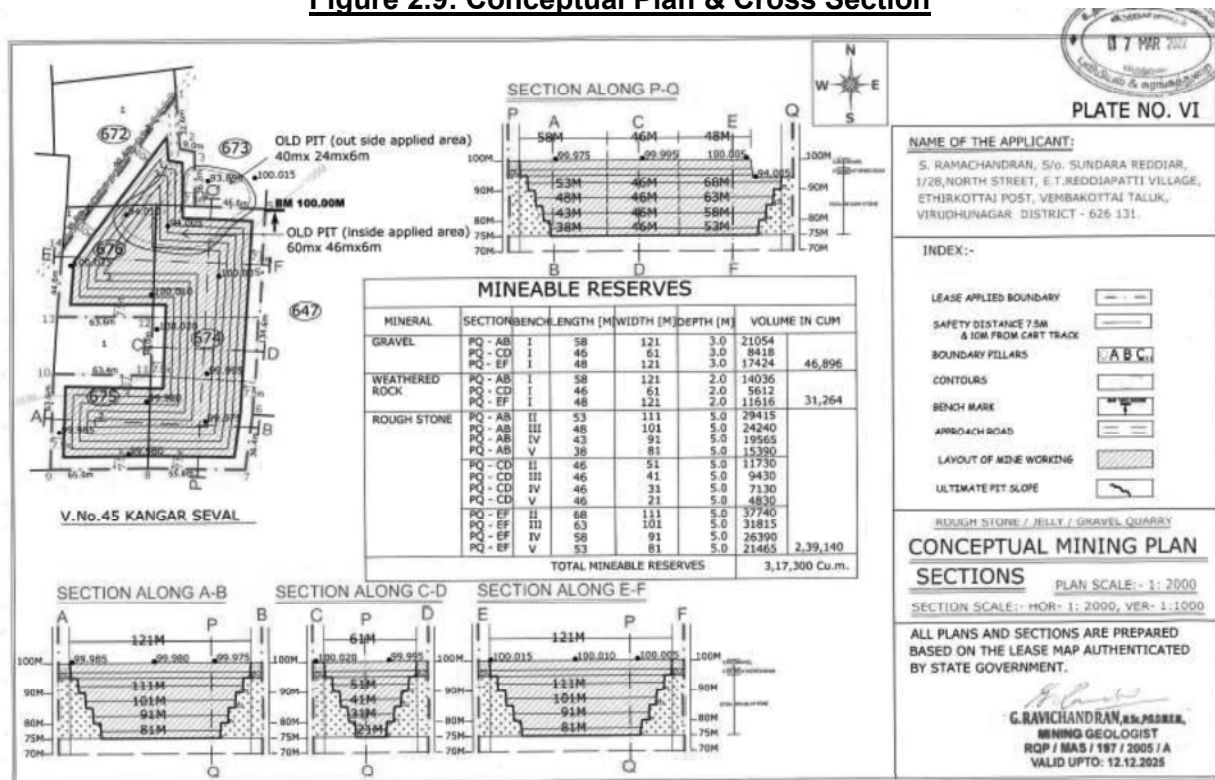
Section	LENGTH(m)	WIDTH(m)	DEPTH(m)
PQ-AB	58	121	20
PQ-CD	46	61	20
PQ-EF	68	121	20

The ground water table on the surface in this area is quite deeper. Hence, ground water intersection in not envisaged. The Conceptual Plan & Cross section are shown in **Figure No. 2.11.**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 2.9: Conceptual Plan & Cross Section**



**LAND DEGRADATION/UTILIZATION:**

The land use pattern at present and at the end of the quarrying period has been provided below.

**Table 2.9: Land Use**

S.No	Land Use	Present Area (Ha)	Area in use – End of 5 years period (Ha)
1	Mining \Excavation	0.276	1.800
2	Infrastructure & Road	Nil	0.050
3	Greenbelt and Plantation	Nil	0.360
4	Undisturbed	2.004	Nil
5	Fencing	Nil	0.070
	<b>Total</b>	<b>2.280</b>	<b>2.280</b>

At the end of the 5 year period, mining will be carried out up to 20m depth. Ultimately the entire mined out area of 1.800 Ha will be left as water body. 0.050 Ha will be the mine roads & infrastructure, 0.360 Ha will be covered with vegetation, and 0.070 will be fencing.



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S. RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**2.9.4 PROJECT REQUIREMENTS:**

**Table 2.10: Project Requirements**

<b>Manpower</b>	18 People directly and more than 50 people indirectly	
<b>Water Requirement and Source</b>	<b>Water Requirement: 5 KLD</b>	
	<b>Details</b>	<b>Quantity (KLD)</b>
	Drinking water and Domestic Use	1.0
	Dust Suppression	3.0
	Green belt	1.0
	<b>Total</b>	<b>5.0</b>
	<b>Source:</b> The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.	
<b>Power Requirement</b>	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.	
<b>Site Services</b>	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	
<b>Project Cost</b>	Rs. 77,28,230 /-	
<b>Funds allocated for socio-economic development</b>	Rs.2.0 Lakhs is allocated under CER budget.	

**2.10 DESCRIPTION OF MITIGATION MEASURES:**

Scientific and systematic development of mines will be carried out by the project authorities for preserving as well as improving the environmental conditions in and around the mining lease area. Elaborate analysis on impacts and mitigation measures to be adopted on implementation of this project and the same has been dealt in Chapter- IV.

**2.11 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY:**

There is no new technology that is being implemented. Opencast method of mining which is the proposed method of mining is a proven technology which is technologically and economically viable. . No major technological failures are anticipated. A disaster management plan shall be put into place to take care of any unforeseen situation.

**2.12 CONCLUSION:**

As good environmental preservation is one of the prime motive of the project proponent. It is expected that the project activity will not have any major impact on environmental equilibrium in the study area.

\* \* \* \* \*





**CHAPTER 3  
DESCRIPTION OF ENVIRONMENT**

**3.1 GENERAL:**

The existing environmental baseline data for the various environmental components were collected in the study area for the purpose of assessing the impact on present environment due to the project activities.

Monitoring was carried out systematically and meticulously as per relevant IS codes, CPCB, MoEF&CC guidelines during **Winter Season (December 2022 to February 2023)** The details of the study are given in this chapter.

For the purposes of this study, the area has been divided into two zones, namely, core and buffer zones. The lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone. The details of villages falling in the study area and other features are given in Index Plan in **Figure No - 3.1**

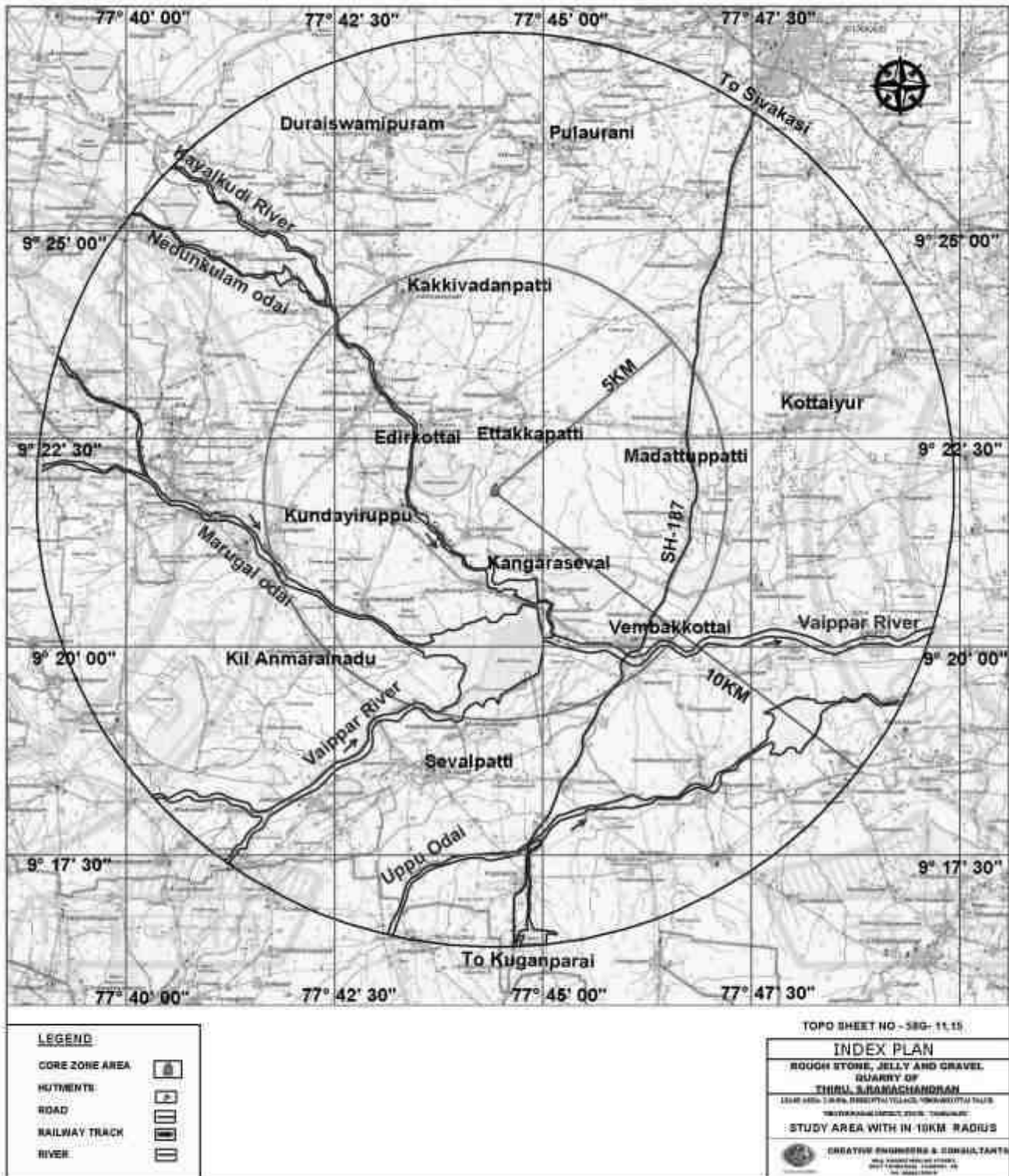
The primary data collection was done by means of field monitoring and the secondary data collection was obtained from published sources and government documents. The details of the baseline data collection which has been elaborated through the course of this chapter has been concised below:

**Table 3.1: Type of Baseline Data**

<b>S.No</b>	<b>Studies</b>	<b>Parameters / Study</b>	<b>Location</b>
1	Socio Economy	Demographic Data from Census 2011	Core and Buffer Zone
		Sample Survey	Buffer Zone
2	Micro Meteorology	Rainfall Data from IMD, Virudhunagar	Virudhunagar District
		Temperature, Humidity, Wind Speed, Wind Direction	1 Representative Location
3	Ambient Air Quality	PM10, PM2.5, SO2, NOx, CO	1 Core Zone, 4 Buffer Zone
4	Water Quality	Physical and Chemical Parameters	1 Core Zone, 4 Buffer Zone
5	Noise Levels	Ambient Noise	1 Core Zone, 4 Buffer Zone
6	Soil Quality	Physical and Chemical Parameters	1 Core Zone, 3 Buffer Zone
7	Land Use and Land Cover	Land use pattern within 10km study area using RS Satellite	Buffer Zone
		Land use based on Census 2011	Core and Buffer Zone
8	Biological Environment	Flora and Fauna	Core Zone and Buffer Zone
9	Hydrology & Hydro Geology	Hydrogeological profile of the area	Core Zone and Buffer Zone

**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Figure 3.1: Study Area Map**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Table 3.2: Environmental Setting of the Study Area**

S.No	Particulars	Name	Distance(Km)	Direction
1	Nearest Highway	SH-186 (Vembakottai –Rajapalayam)	1.75	SW
		SH-183 (Alangulam – Sivakasi)	3.4	W
		SH-187(Vembakottai – Sivakasi)	4.25	E
2	Nearest Railway Station	Sivakasi	12	NE
3	Nearest Airport	Madurai	65	NE
4	Nearest Village	Lakshmipuram	0.95	SW
		Ettakapatti Village	1.4	NE
		Kundayiruppu Village	1.8	SW
		Editkottai Village	1.9	NW
5	Nearest Town	Sivakasi	12	NE
6	Notified Archaeologically important places, Monuments	Vijayakaraisalkulam Archeological Site	4.96	SW
7	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil	--	--
8	Reserved / Protected Forests	Nil	--	--
9	Nearest Water Bodies	Odai	0.200	NW
		Odai	0.275	NW
		Odai	0.255	SE
		Kayalkudi River	1.5	SW
		Marugal Odai	3.7	SW
		Vaippar River	4.1	SE
		Uppu Odai	7.2	SE
		Nedunkulam odai	5.6KM	W
9	Defence Installations	Nil	--	--
10	Seismic Zone	Zone – II (Least Active)	--	--
11	Other Industries in the study area	Other than few rough stone quarries, Crusher, Fireworks unit there are no other industries in the nearby region.		

\*Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves

### 3.2 SOCIO-ECONOMIC CONFIGURATIONS OF THE AREA:

#### 3.2.1 GENERAL:

The Socio-Economic details of the study area are collected through:

- Identification of villages falling from the study area map with combined Taluk map.
- Collection of primary data through sample survey, village meetings and focused group discussion.



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

- Collection of the demographic pattern of villages falling in the area through NIC 2011 census data.
- Occupational structure of villages falling in the study area through NIC 2011 census data.
- Details of the amenities available in villages falling in the study area through NIC 2011 census data. The findings of the study are illustrated below:

**3.2.2 SECONDARY DATA DESCRIPTION:**

The proposed quarry is located in in Edirkottai Village, Vembakottai Taluk, Virudhunagar District. Based on 2011 census data, in the 10km radius the following are present:

**Table 3.3: Details of Buffer Zone**

Taluk Name	District Name	No. of Villages	No. of Urban Areas
Sattur	Virudhunagar	4	--
Sivakasi	Virudhunagar	22	4
<b>Total</b>		<b>26</b>	<b>4</b>

**Table 3.4: Social, Economic and Demographic Profile of the Study Area**

Details	Population	Percentage
<b>A. Gender-wise distribution</b>		
Male Population	85087	49.55
Female Population	86618	50.45
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>B. Caste-wise population distribution</b>		
Scheduled Caste	36778	21.42
Scheduled Tribes	158	0.09
Other	134769	78.49
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>C. Literacy Levels</b>		
Total Literate Population	117410	68.38
Others	54295	31.62
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>D. Occupational structure</b>		
Main workers	84654	49.30
Marginal workers	5822	3.40
<b>Total Workers</b>	<b>90476</b>	<b>52.70</b>
<b>Total Non-workers</b>	<b>81229</b>	<b>47.30</b>
<b>Total</b>	<b>171705</b>	<b>100</b>



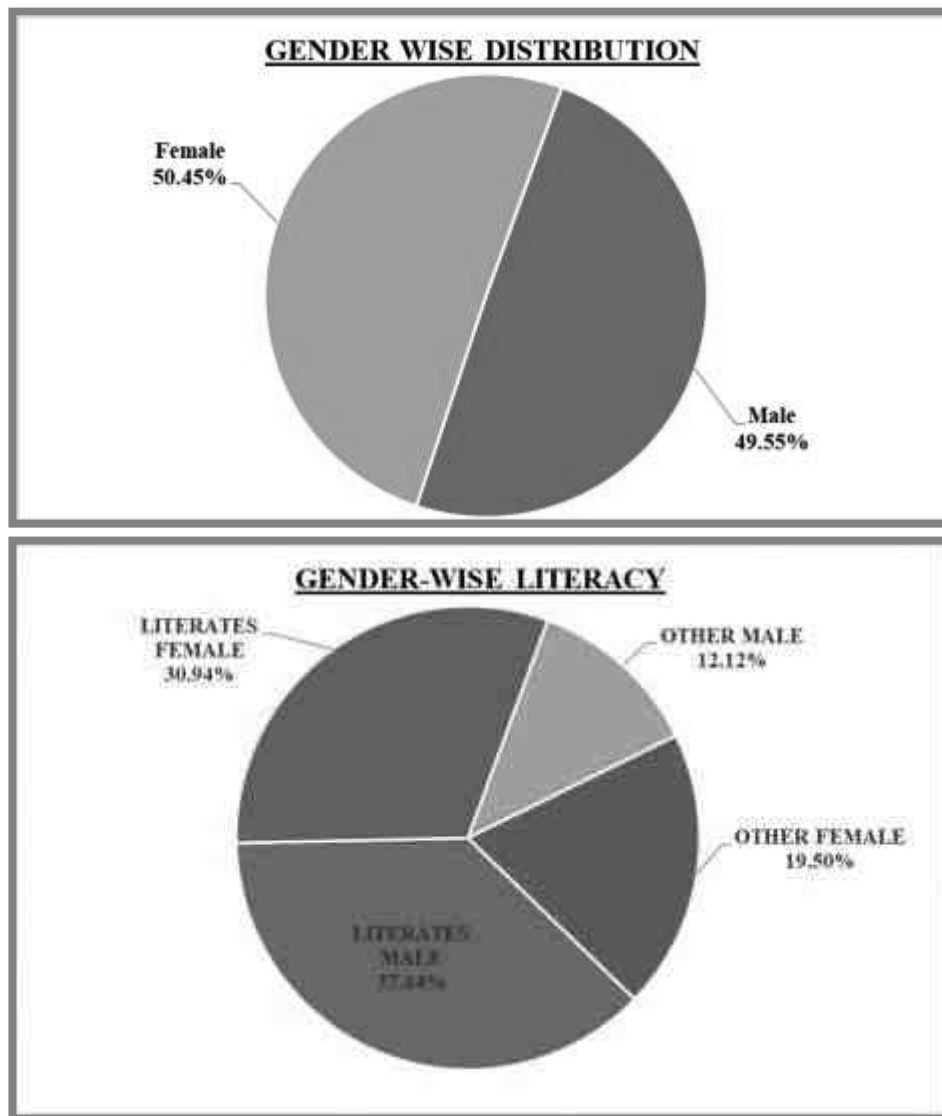


**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

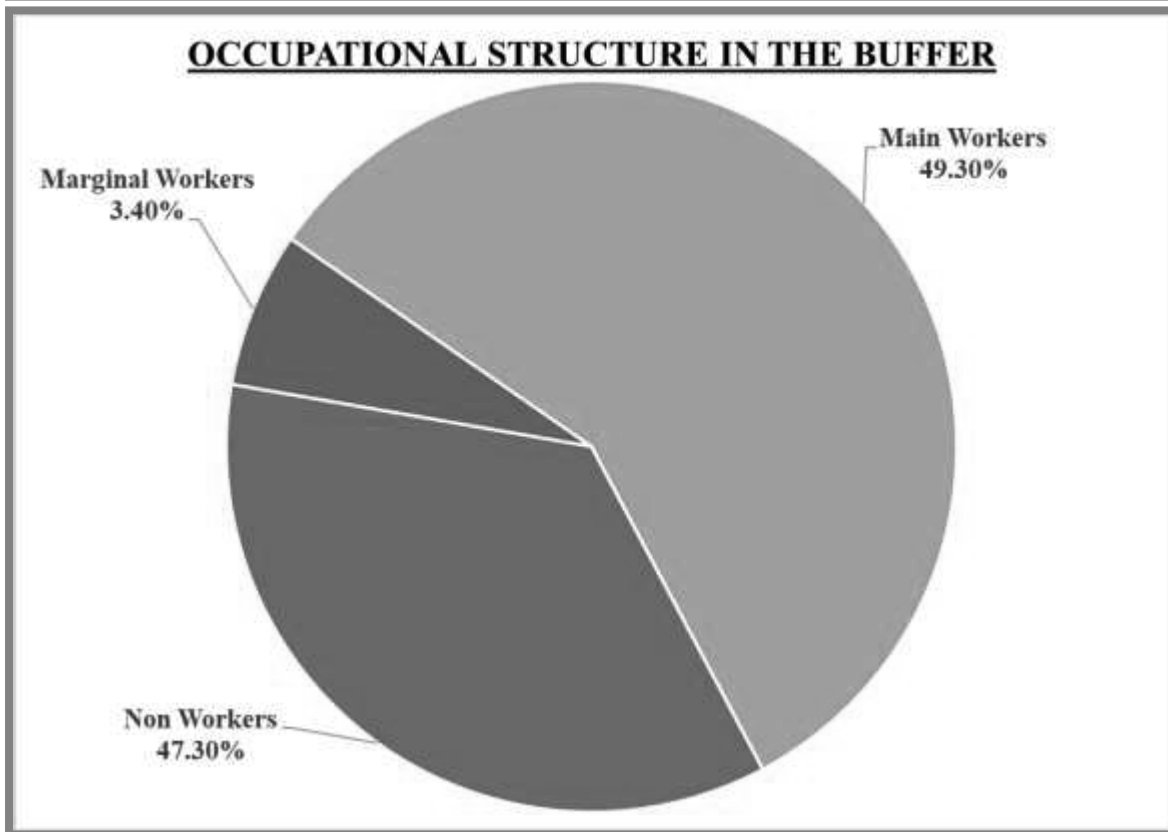
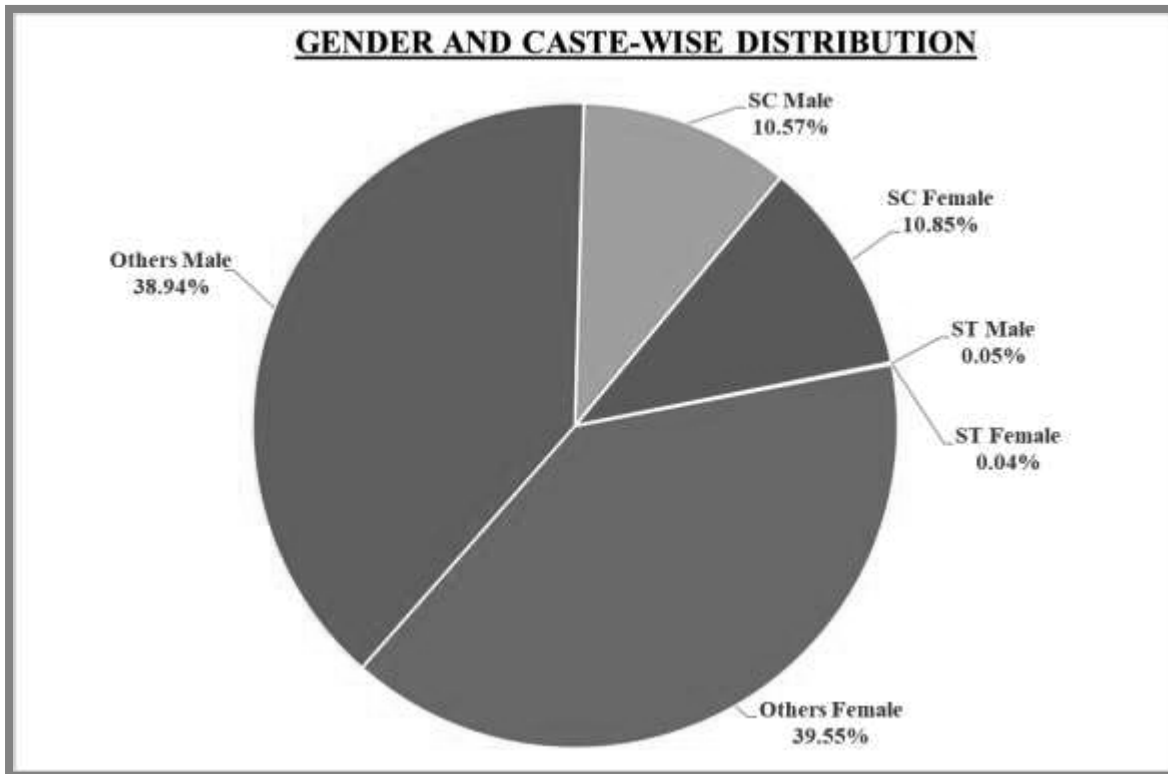
The total population of these 26 rural villages and 4 urban areas is 171705 in which the male population is 85087 (49.55%) and the female population is 86618 (50.45%). This shows that the male and female population ratio is almost equal. Among the total population 0.09% belong to Scheduled Tribes, 21.42 % are Scheduled Caste and the balance 78.49 % people belong to other castes. Among the total population, 68.38% of the people are literate.

The village wise population, literacy levels and occupational structure details area given in **Annexures 4 and 5**. The demographic structure within the buffer zone is shown diagrammatically in **Figure No – 3.2**.

**Figure 3.2: Demographic Structure in Buffer Zone**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**3.2.3 DETAILS OF AMENITIES:**

Based on 2011 census data, regarding the educational facilities, there are totally 74 Primary Schools functioning in these 26 rural villages. Among them 1 villages have 0 primary school, 3 villages have 1 primary schools, 9 villages have 2 primary schools, 5 villages have 3 primary schools, 4 villages has 4 primary schools ,2 villages have 5 primary schools, 2 villages have 6 primary schools.

**Table 3.5: Primary Schools in the Buffer Zone Rural Villages**

S.No	No of Rural Villages	Number of primary schools	Total
1	1	0	0
2	3	1	3
3	9	2	18
4	5	3	15
5	4	4	16
6	2	5	10
7	2	6	12
<b>Total</b>	<b>26</b>		<b>74</b>

**Table 3.6: Education Facility Availability**

PARTICULARS	Available in village
Govt Primary School	25
Govt Middle School	22
Govt Secondary School	11
Govt Senior Secondary School	6
Govt Arts and Science Degree College	0
Govt Engineering College	0
Govt Medicine College	0
Govt Management Institute	0
Govt Polytechnic	0
Govt Vocational Training School/ITI	0

Better and higher education facilities are available in nearby Virudhunagar city corporation.

**Table 3.7: Healthcare Amenities Availability**

PARTICULARS	Available in village
Community Health Centre	1
Primary Health Centre	3
Primary Health Sub Centre	21
Maternity And Child Welfare Centre	6
TB Clinic	3
Hospital Allopathic	0
Hospital Alternative Medicine	0
Dispensary	3



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

Veterinary Hospital	6
Mobile Health Clinic	0
Family Welfare Centre	3

Better Healthcare facilities are available in nearby town like Virudhunagar City Corporation.

**Table 3.8: Infrastructure Facilities**

Particulars	Available in village
Tap Water-Treated	25
Covered Well	8
Hand Pump	21
Tube Wells/Borehole	24
Post office	4
bus services	0
Commercial Bank	5
Cooperative bank	10

The details of the educational, medical and infrastructural facilities available in the buffer zone is provided in **Annexures- 6-8**.

**3.2.4 SAMPLE SURVEY:**

- Studied villages have different community people which include different religion and different castes.
- Predominantly the study area is seasonal dry, barren land.
- Patches of plantation and agriculture are observed during the monsoon season.
- Paddy, Sunflower, Nithiyakalani, Akathikeerai, Banana and vegetables are commonly cultivated.
- Majority of the people are small farmers and others are working in the nearby industries
- Since agriculture is predominantly rainfed and the water is available only for four months, during the rest of the time they have less employment opportunities. Other occupations include construction workers, vendors, etc.
- Other allied activities livestock rearing and poultry farming are also found.
- Reasonably better amenities like approach road bus facility, electricity, mobile phone connectivity, Public Distribution System, banks etc are available.
- Bore well is the main source for drinking water. There are OHT's, Ground level tanks, public taps are available.



### **3.3 EXISTING ENVIRONMENTAL QUALITY**

#### **3.3.1 MICRO-METEOROLOGY**

##### **3.3.1.1 General:**

The meteorological conditions in an area regulate the dispersion of air pollutants being released into the atmosphere. The principal variables are horizontal convective transport i.e. wind speed and direction and vertical convective transport, i.e. mixing height, stability class and topography of the area.

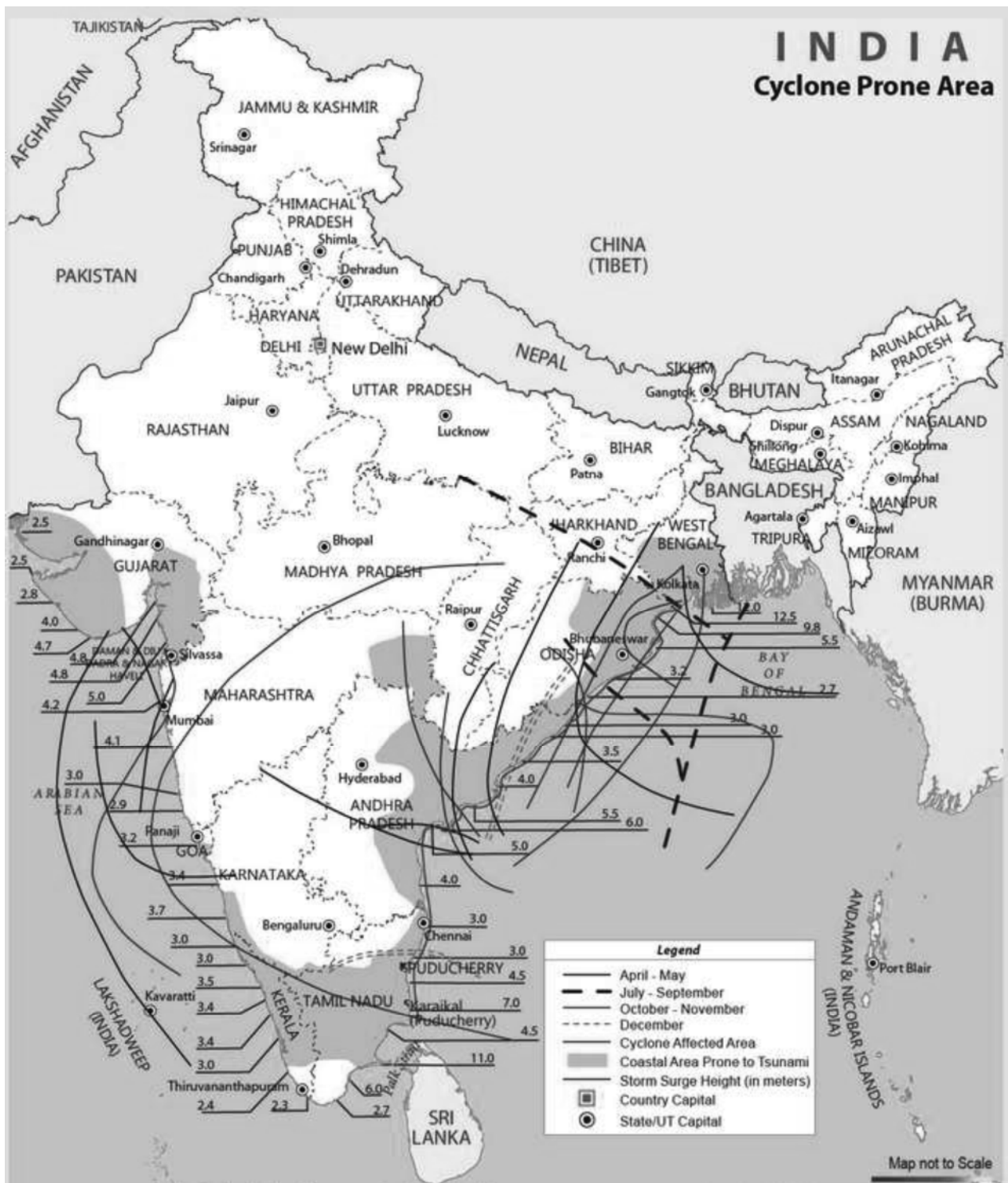
##### **3.3.1.2 Historical Meteorological Data:**

###### **A. Cyclones And Depressions**

Cyclonic storms and depressions in Bay of Bengal affect the East Coast of India. Isolated ones, forming in January to March in the South Bay of Bengal move West-North-westwards and hit Tamil Nadu coast. In April and May, cyclonic storms and depressions form in the South and adjoining Central Bay and move initially to the Northwest, then North and then recurve to the Northeast striking the Arakan coasts in April and Andhra Pradesh (AP)-Orissa-West Bengal (WB) – Bangladesh coasts in May. Most of the monsoon (June – September) storms develop in the central and in the north bay and move west – north - westwards affecting AP – Orissa – WB coasts. Post monsoon (October – December) storms form mostly in the south and central Bay, recurve between 15° and 18° N affecting Tamil Nadu – AP – Orissa – WB – Bangladesh coasts. **Figure No - 3.3** depicts the history of cyclonic storms, which have struck the Indian coast during the months of October, November and December during the last 75 years. **(Source: Vulnerability Atlas of India series, above figure accessed from [www.maps of india.com](http://www.maps of india.com)).** East coast is prone to cyclonic storms round the year but mostly these occur prior to SW i.e., in May and after SW monsoon i.e., in October and November.

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**Figure 3.3: History of Cyclonic Storms**

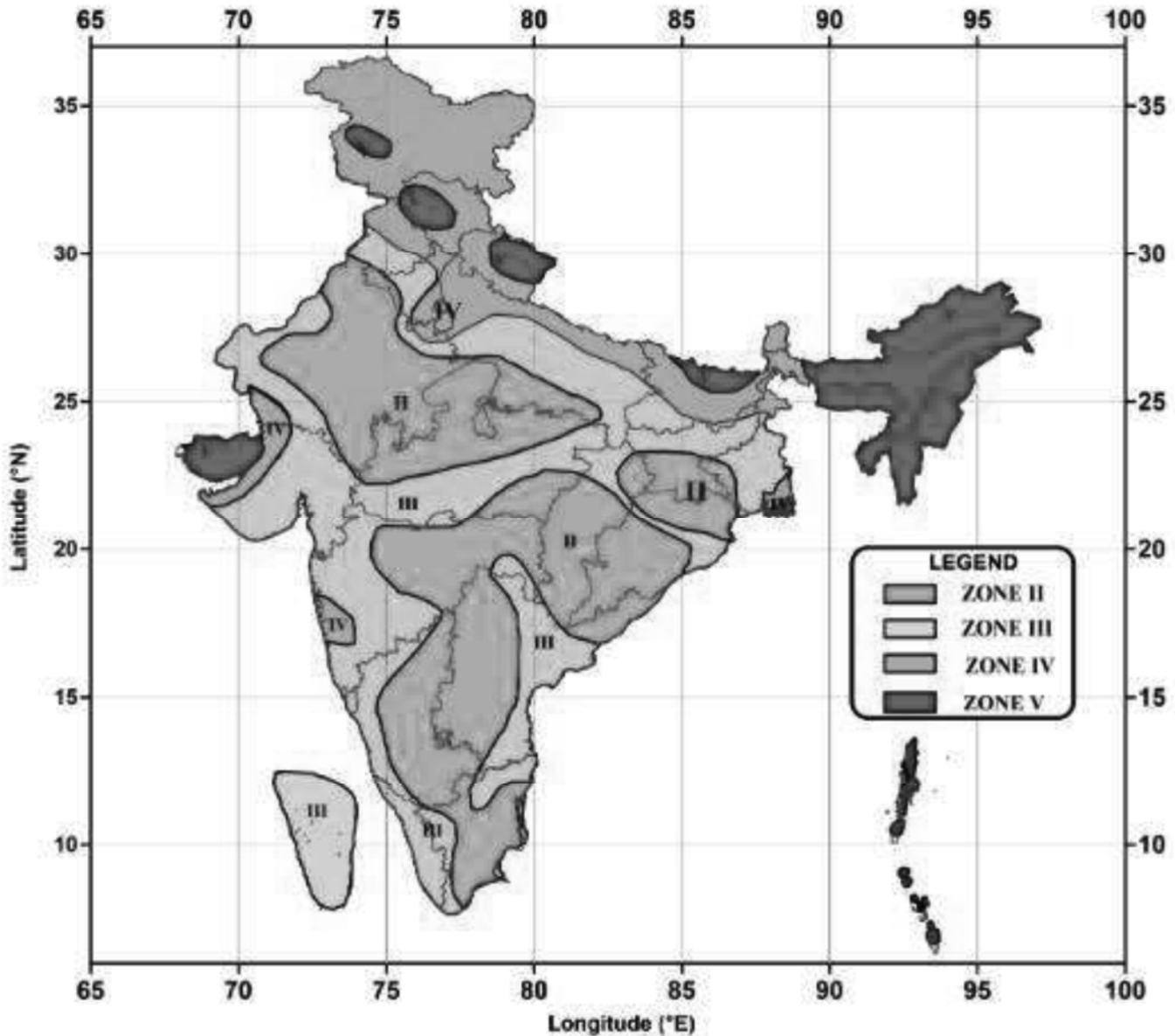


**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**B. SEISMIC DATA**

From the seismic zone map of India as depicted in the **Figure No - 3.4**, it can be seen that the project site and study area falls in the Zone – II and is described as least active zone.

**Figure 3.4: Seismic Zone Map of India**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

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**C. Climate and Rainfall Data:**

**Temperature:** From the middle of February, temperature increases steadily. The weather is quite hot in May and June and the maximum temperature sometimes reaches 40°Celsius. With the onset of the southwest monsoon by the end of May or beginning of June, there is some drop in temperature.

**Cloudiness:** During the months of April and May, the skies become heavily clouded and threatening in the afternoons on many days when thunderstorms follow. In the southwest and northeast monsoon seasons, the sky is heavily clouded or overcast.

**Winds:** Generally light to moderate in strength and NW-SW and vice-versa. Between May and September winds are mainly north westerly or westerly. From October to February winds are mainly north easterly or northerly.

**Rainfall:** Main rainy season is from October to the middle of January. November is generally the rainiest month. The average annual rainfall data from 2011 – 2020

Rainfall data collected by Virudhu Nagar , IMD station for the period of 2011 to 2020 is given in

**Table No.3.8** Rainfall histograms are presented in **Figure No - 3.5 and 3.6.**

**Table 3.9: Average Annual Rainfall Data (2011-2020)**

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Rainfall
<b>2011</b>	85.49	162.8	109.57	201.3	119.75	392.46	313.13	227.99	199.02	146.11	190.62	197.52	<b>2345.76</b>
<b>2012</b>	16.29	18.37	76.82	297.85	81.31	192.98	223.09	287.28	155.75	234.49	127.34	14.38	<b>1725.95</b>
<b>2013</b>	10.22	43.85	46.9	14.44	27.26	15.48	2.4	115.17	43.3	118.37	68.61	84.27	<b>590.27</b>
<b>2014</b>	11.2	2.25	7.42	14.03	187.33	9.68	9	78.69	65.2	217.23	146.17	55.08	<b>803.28</b>
<b>2015</b>	4.45	3.43	31.39	95.62	114.89	17.83	28.19	53.96	84.73	103.78	279.24	140.03	<b>957.54</b>
<b>2016</b>	0.24	0.03	1.71	5.88	85.2	16.88	69.79	39.75	47.21	66.65	49.6	60.33	<b>443.27</b>
<b>2017</b>	20.72	2.81	15.1	3.18	32.84	7.88	27.54	42.11	62.59	40.74	42.35	17	<b>314.86</b>
<b>2018</b>	0.74	1.28	11.62	21.13	66.02	14.49	33.67	41.94	47.92	134.91	68.92	7.28	<b>449.92</b>
<b>2019</b>	5.08	2.26	3.23	2.33	4.5	17.83	18.5	71.16	163.58	251.1	109.63	88.91	<b>738.11</b>
<b>2020</b>	3.87	0.48	0.11	24.2	69.81	32.41	40.51	45.93	94.14	138.83	241.45	139.88	<b>831.62</b>
<b>NORMAL</b>	<b>18.5</b>	<b>23.5</b>	<b>37.6</b>	<b>76.8</b>	<b>60.2</b>	<b>18.3</b>	<b>31.1</b>	<b>51.6</b>	<b>80.8</b>	<b>191</b>	<b>175.5</b>	<b>64.7</b>	<b>829.6</b>

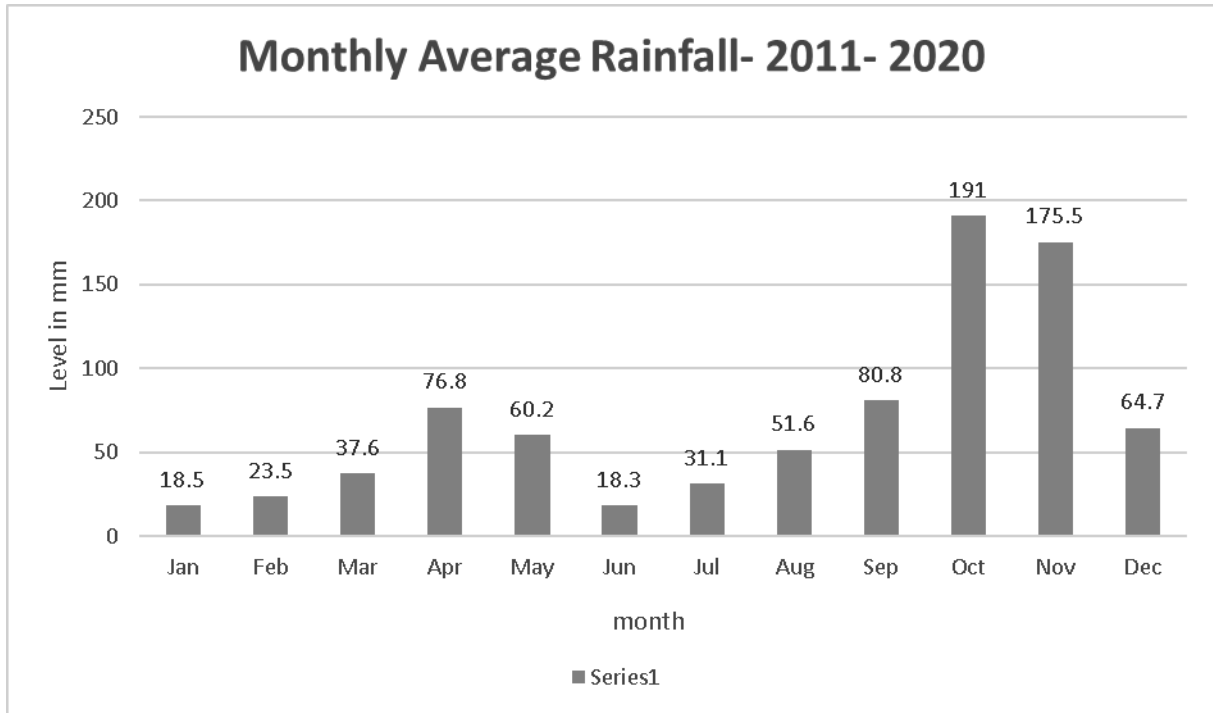
Source – Virudhunagar District, IMD



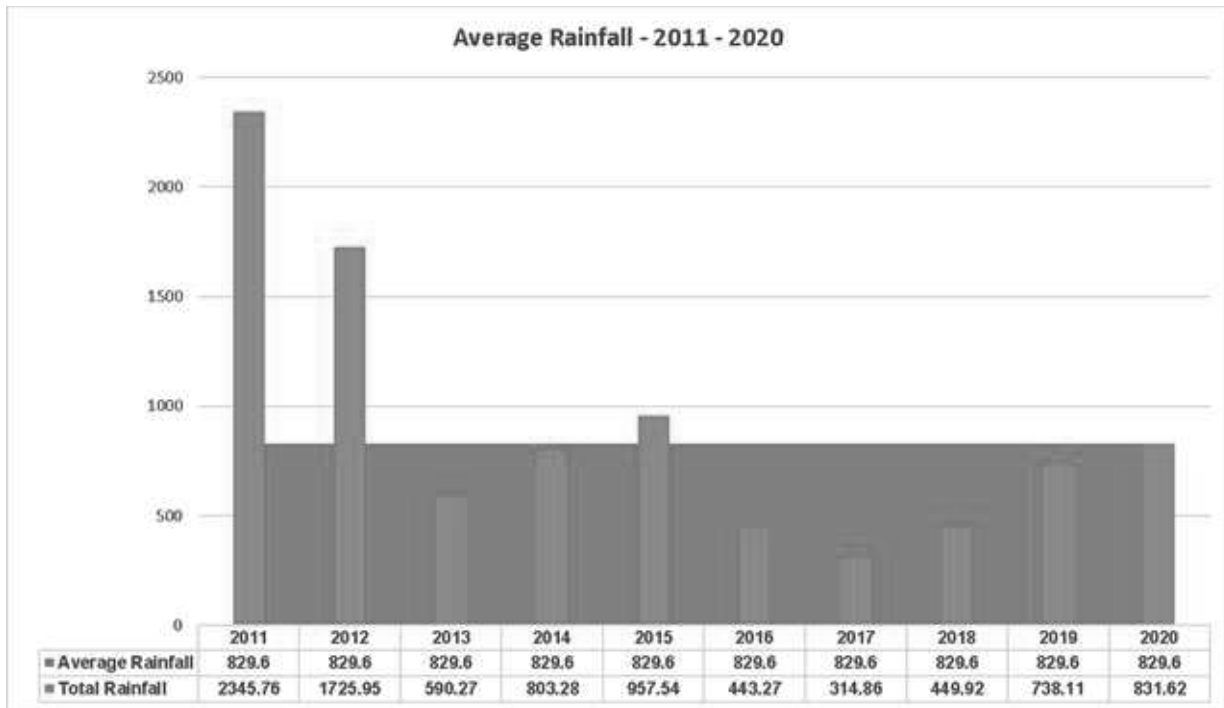


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**Figure 3.5: Total Rainfall**



**Figure 3.6: Average Annual Rainfall**



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**3.3.1.3 SITE SPECIFIC METEOROLOGICAL DATA:**

Micrometeorology and microclimatic parameters of wind velocity, wind direction, ambient temperature, relative humidity, were collected throughout the monitoring period.

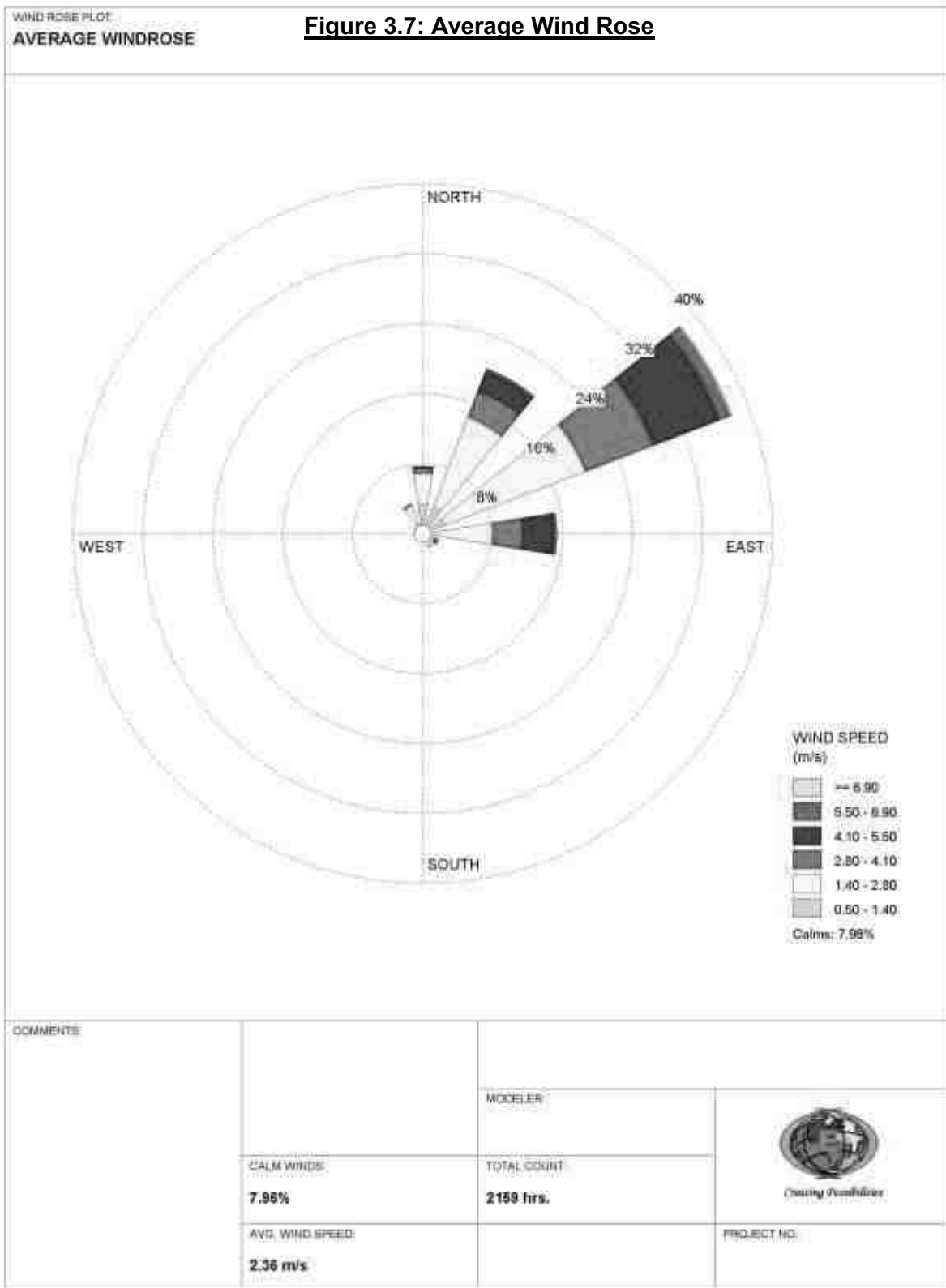
**DATA ANALYSIS:**

The temperature in the area during the study period ranged from 16.1°C to 35.0°C while the relative humidity varied between 12.0 - 99%. The wind speed during the study period ranged from <1.8 to 27.7 km/h. The predominant wind direction is from NE. The meteorological data are presented in **Table no – 3.9**. The average wind rose is depicted in **Figure No - 3.7**.

**Table 3.10: Meteorological Data**

S.NO	PARAMETERS	MIN	MAX
1	Temperature In °c	16.1	35.0
2	Humidity in %	12.0	99.0
3	Wind speed in km/hr	<1.8	27.7
4	Predominant wind direction from	NE	

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**3.3.2 AMBIENT AIR QUALITY (AAQ):**

Ambient Air quality has been assessed through a network of 5 ambient air quality stations. The following methodology has been considered for design of ambient air quality monitoring network in the area. Based on these criteria, 5 numbers of air sampling stations were selected in the area as shown below in Table No.3.10.

- ❖ Topography / terrain of study area.
- ❖ Populated areas within study area.
- ❖ Residential /sensitive areas within study area.
- ❖ Magnitude of surrounding industries.
- ❖ Representation of regional background levels.
- ❖ Representation of cross sectional distribution in down wind direction.
- ❖ Predominant wind direction and wind pattern.

**Table 3.11: Air Quality Monitoring**

1.	<b>Monitoring Period</b>	Winter Season ( Dec 2022 – Feb 2023)
2.	<b>Monitoring Location</b>	The location map showing Ambient Air Quality study stations are shown in <b>Figure No- 3.9</b> .
3.	<b>Methodology</b>	
	<b>Parameter</b>	<b>Protocol</b>
	a. Particulate Matter (PM10)	Gravimetric (IS 5182: Part 23:2017)
	b. Particulate Matter PM2.5	Gravimetric ( IS 5182: Part 24:2019)
	c. Sulphur Dioxide	Colorimetric (West & Gaeke Method) (IS 5182: Part 02: 2017)
	d. Nitrogen Dioxide	Colorimetric(Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2017)
	e. Carbon Monoxide	CO Monitor
	f. Silica	Colorimetric (Molybdate Method) NIOSH 7601 -2003
4.	<b>Monitoring Frequency</b>	2 days in a week, 4 weeks in a month for 3 months in a season.

**Table 3.12: Air Quality Monitoring Locations**

S.NO	LOCATION CODE	LOCATION	DISTANCE FROM CORE ZONE (KM)	DIRECTION
1	A1	Near Mine Lease Area	-	-
2	A2	Edirkottai Village	1.8km	NW
3	A3	Ettakkapatti Village	1.4km	NE
4	A4	Kundayiruppu Village	1.9km	SW
5	A5	Kangerseval Village	1.5km	SE



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**Figure 3.8: Ambient Air Quality Study Stations**



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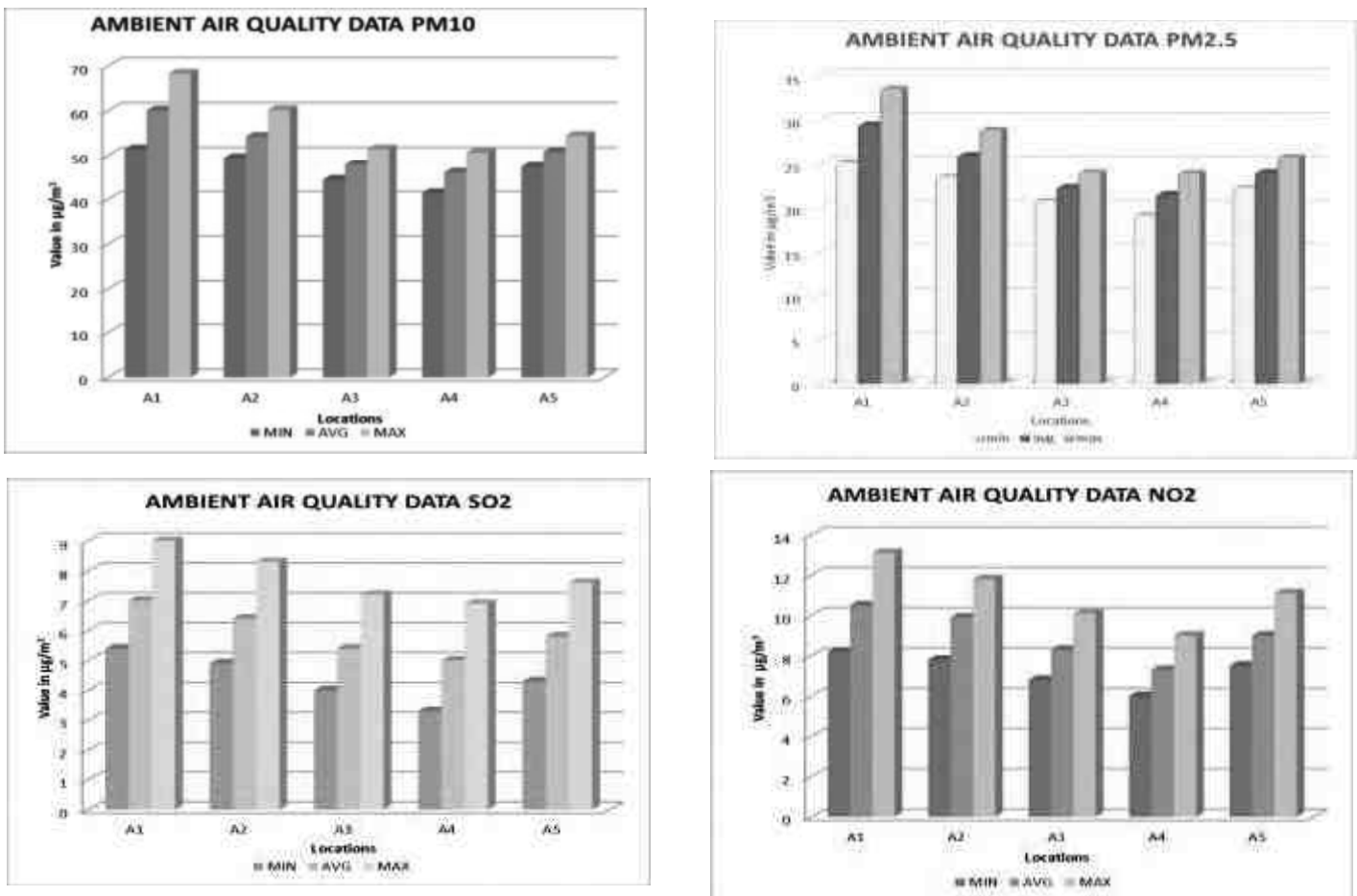
**Table 3.13: Ambient Air Quality Data**

All Value in  $\mu\text{g}/\text{m}^3$

PARAMETERS	Cat.*	PM <sub>10</sub>			PM <sub>2.5</sub>			SO <sub>2</sub>			NO <sub>2</sub>		
LOCATIONS		MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX
A1-Near Mine Lease Area	I	51.4	60.1	68.3	25.2	29.5	33.6	5.4	7	9	8.2	10.5	13.1
A2-Edirkottai Village	R	49.4	54.2	60.2	23.6	26	28.9	4.9	6.4	8.3	7.8	9.9	11.8
A3-Ettakkapatti Village	R	44.4	47.8	51.4	20.8	22.4	24.1	4	5.4	7.2	6.8	8.3	10.1
A4-Kundayiruppu Village	R	41.4	46	50.6	19.2	21.6	24	3.3	5	6.9	6	7.3	9
A5-Kangerseval Village	R	47.3	50.8	54.4	22.3	24.1	25.8	4.3	5.8	7.6	7.5	9	11.1
<b>NAAQ Limits</b>		<b>PM<sub>10</sub></b>			<b>PM<sub>2.5</sub></b>			<b>SO<sub>2</sub></b>			<b>NO<sub>2</sub></b>		
	*	<b>100</b>			<b>60</b>			<b>80</b>			<b>80</b>		
	**	<b>100</b>			<b>60</b>			<b>80</b>			<b>80</b>		

**\*Note:** Category: \* - Industrial, Residential, Rural and other area, \*\* – Ecologically Sensitive Area (notified by Central Government)

**Figure 3.9: Ambient Air Quality Data**



**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**3.3.2.1 Results and Discussion:**

The AAQ monitored data for all locations for above parameters are shown in **Table No - 3.12** and in **Figure No - 3.10**. Ambient Air Quality data during the study period is given in **Annexure-9**. From the table it is seen that, in the ambient air, the PM<sub>10</sub> values were in the range of 41.4-68.3 µg/m<sup>3</sup>. PM<sub>2.5</sub> values were in the range of 19.2 – 33.6 µg/m<sup>3</sup>. SO<sub>2</sub> levels were ranging from 3.3 – 9.0 µg/m<sup>3</sup>. NO<sub>2</sub> levels were ranging from 6.0 – 13.1 µg/m<sup>3</sup>.

The existing Ambient Air Quality levels for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub>, are within the NAAQ standards prescribed CPCB limits of 100 µg/m<sup>3</sup>, 60 µg/m<sup>3</sup>, 80 µg/m<sup>3</sup> & 80 µg/m<sup>3</sup>. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m<sup>3</sup>)

**3.3.3 WATER ENVIRONMENT:**

Assessment of baseline data on water environment includes Identification of water resources, Collection of water samples and Analyzing water samples collected for physico-chemical parameters as per standards. The water sampling was carried out for 5 locations. Details of the same has been provided below:

**Table 3.14: Water Quality Monitoring**

1.	<b>Monitoring Period</b>	Winter Season ( Dec 2022 – Feb 2023)			
2.	<b>Monitoring Location</b>	The location map showing water sampling locations are given in <b>Figure No.3.11</b> .			
	<b>Code</b>	<b>Location</b>	<b>Sample Type</b>	<b>Distance</b>	<b>Direction</b>
	<b>W1</b>	Near Mine Lease Area	<b>Bore Well</b>	-	-
	<b>W2</b>	Edirkottai Village	Borewell	1.8km	NW
	<b>W3</b>	Ettakkapatti Village	Borewell	1.4km	NE
	<b>W4</b>	Kundayiruppu Village	Borewell	1.9km	SW
	<b>W5</b>	Kangerseval Village	Borewell	1.5km	SE
3.	<b>Methodology</b>	Sampling - IS 3025 Part - I			
		Analysis – IS 3025 relevant parts / APHA 23rd Edition			



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**Figure 3.10: Location of Water Sampling Stations**





**DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF THIRU S.RAMACHANDRAN AT 672/3, 674, 675/2, 676/3 OVER AN AREA OF 2.28.0HA IN ETHIRKOTTAI VILLAGE, VEMBAKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU**

**Table 3.15: Summary of Water Quality Data**

Season	Dec 2022 to Feb 2023	
Monitoring Locations	5 locations	
Parameters	Range of values	Limits*
pH at 25 °C	6.96 – 7.54	<b>6.5-8.5</b>
Total Dissolved Solids, mg/L	510 – 652	<b>2000</b>
Chloride as Cl-, mg/L	106 – 215	<b>1000</b>
Total Hardness (as CaCO <sub>3</sub> ), mg/L	174 – 492	<b>600</b>
Total Alkalinity (as CaCO <sub>3</sub> ), mg/L	112– 582	<b>600</b>
Sulphates as SO <sub>4</sub> <sup>2-</sup> , mg/L	11.4 – 82.9	<b>400</b>
Iron as Fe, mg/L	0.04– 0.07	<b>0.3</b>
Nitrate as NO <sub>3</sub> , mg/L	BDL(D.L – 1.0)– 2.58	<b>45</b>
Fluoride as F, mg/L	0.44 – 0.58	<b>1.5</b>

**3.3.3.1 Results and Discussion:**

The results of the water sample analysis are shown in **Table No - 3.14**. The pH values were ranging in between 6.96 – 7.54 TDS values were in the range of 510 – 652mg/L. Chloride values were ranging from 106 – 215mg/L. Iron content was found to be in the range 0.04– 0.07mg/L. The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications. The water quality data is provided in **Annexure-10**.

**3.3.4 NOISE ENVIRONMENT:**

Operational phase of this project may lead to increase noise levels from the existing levels at least in and around the project area. As noise level beyond permissible limits will cause adverse impacts on the environment, it has become imperative to assess the noise levels in and around the mine area. Noise level measurements were taken at the 5 locations during the monitoring period. Details of the same are provided below:

**Table 3.16: Noise Level Monitoring**

1.	<b>Monitoring Period</b>	Winter Season ( Dec 2022 – Feb 2023)		
2.	<b>Monitoring Location</b>	The location map showing noise monitoring locations are given in <b>Figure No.3.12</b> .		
	<b>Code</b>	<b>Location</b>	<b>Distance</b>	<b>Direction</b>



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	<b>N1</b>	Near Mine Lease Area	-	-
	<b>N2</b>	Edirkottai Village	1.8km	NW
	<b>N3</b>	Ettakapatti Village	1.4km	NE
	<b>N4</b>	Kundayiruppu Village	1.9km	SW
	<b>N5</b>	Kangerseval Village	1.5km	SE
3.	<b>Methodology</b>	Noise levels were measured using sound level meter manufactured by (Model No - SL- 4001, Make - Lutron). Sound Pressure Level (SPL) measurements were measured at all locations where ambient air quality monitored; one reading for every hour was taken for 24 hours.		
4.	<b>Monitoring Frequency</b>	Once during monitoring period		



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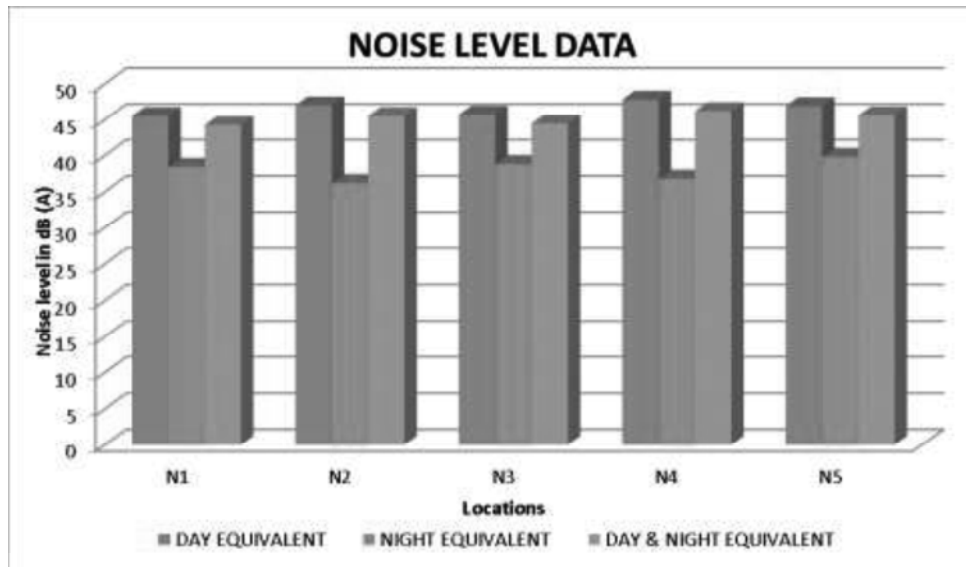
**Figure 3.11: Location of Noise Sampling Stations**



**Table 3.17: Ambient Noise Level in dB (A)**

Date and time of monitoring	N1	N2	N3	N4	N5
Day Equivalent	45.5	47.0	45.7	47.8	46.9
Night Equivalent	38.4	36.2	38.8	36.8	39.8
Day & Night Equivalent	44.2	45.5	44.4	46.2	45.6
Limits: As per CPCB: Work zone Exposure in 8 hr - 90 dB(A)					
As per MoEF&CC: Residential: Day equivalent - 55 dB(A); Night equivalent - 45 dB(A)					

**Figure 3.12: Noise Level Data**



### 3.3.4.1 Results and Discussion:

The results of noise levels for all locations are given in **Table No-3.15**. The noise values for all above locations are shown in a comparative chart given in **Figure No - 3.13**. In the buffer zone, day Equivalent Noise (Leq-d) noise levels were ranging from 45.5 dB(A) to 47.8 dB(A) and night Equivalent Noise (Leq-d) levels ranged between 36.2 dB(A) to 39.8 dB(A). While comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.

### 3.3.5 SOIL CHARACTERISTICS:

Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. Elaborate details of the same has been provided below.

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**Table 3.18: Soil Quality Monitoring**

1.	<b>Monitoring Period</b>	Winter Season ( Dec 2022 – Feb 2023)		
2.	<b>Monitoring Location</b>	The location map showing soil sampling locations are given in <b>Figure No.3.14.</b>		
	<b>Code</b>	<b>Location</b>	<b>Distance</b>	<b>Direction</b>
	<b>S1</b>	Near Mine Lease Area	-	-
	<b>S2</b>	Edirkottai Village	1.8km	NW
	<b>S3</b>	Ettakkapatti Village	1.4km	NE
	<b>S4</b>	Kundayiruppu Village	1.9km	SW
3.	<b>Methodology</b>	Composite soil samples using sampling augers and field capacity apparatus.		
4.	<b>Monitoring Frequency</b>	Once during monitoring period		



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**Figure 3.13: Location of Soil Sampling Stations**



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**Table 3.19: Soil Quality Data**

S.No	Parameters	Unit	S1	S2	S3	S4
1	pH at 25°C	-	6.92	7.14	7.08	7.32
2	Electrical Conductivity	(µmhos/cm)	63.57	48.95	80.57	65.92
3	Dry matter content	%	97.58	96.46	94.85	96.57
4	Water Content	%	2.42	3.54	5.15	3.43
5	Organic Matter	%	0.62	0.98	0.75	1.34
6	Soil texture	-	Sandy Clay	Sandy Loam	Silt Loam	Sandy Clay
7	Grain Size Distribution i. Sand	%	48.98	49.96	39.45	51.16
8	ii. Silt	%	10.42	37.62	55.31	6.25
9	iii. Clay	%	40.6	12.42	5.24	42.6
10	Phosphorous	µg/g	2.32	2.15	1.36	2.86
11	Sodium	mg/kg	770	726	695	1022
12	Potassium	mg/kg	530	592	574	834
13	Total Nitrogen	mg/kg	195	116	159	190
14	Total Sulphur	%	BDL(D.L - 0.02)	BDL(D.L - 0.02)	BDL(D.L - 0.02)	BDL(D.L - 0.02)

**3.3.5.1 Results and Discussion:**

Results of the soil samples show that the pH values were ranging between 6.92 to 7.32 and Electrical Conductivity values were ranging between 48.96 – 80.57 µmhos/cm. Soils are generally sandy clay loam type. Organic matter values were ranging between 0.62 – 1.34 %.

Total Nitrogen values were ranging between 116 - 195 mg/kg. Phosphorus values were ranging between 1.36 – 2.86 µg/g. Potassium values were ranging between 530 -834 mg/kg. Sodium values were ranging between 695- 1022 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 4 samples collected and analyzed are provided in **Table No – 3.18.**

**3.4 LAND ENVIRONMENT - LANDUSE & LAND COVER**

For preparing an impact statement, aspects of the land conditions are covered under land use. An industrial project / mine can cause changes in land use, soil process in different intensities depending upon the size of the project and distance involved between the industries and the area. Here, land use status for a radius of 10 km has been studied.

**3.4.1 DATA USED AND METHODOLOGY**

For the present study on land use pattern of buffer area around the proposed stone and gravel quarry, an archived historical data of Landsat 8 data shas been used as base data acquired on



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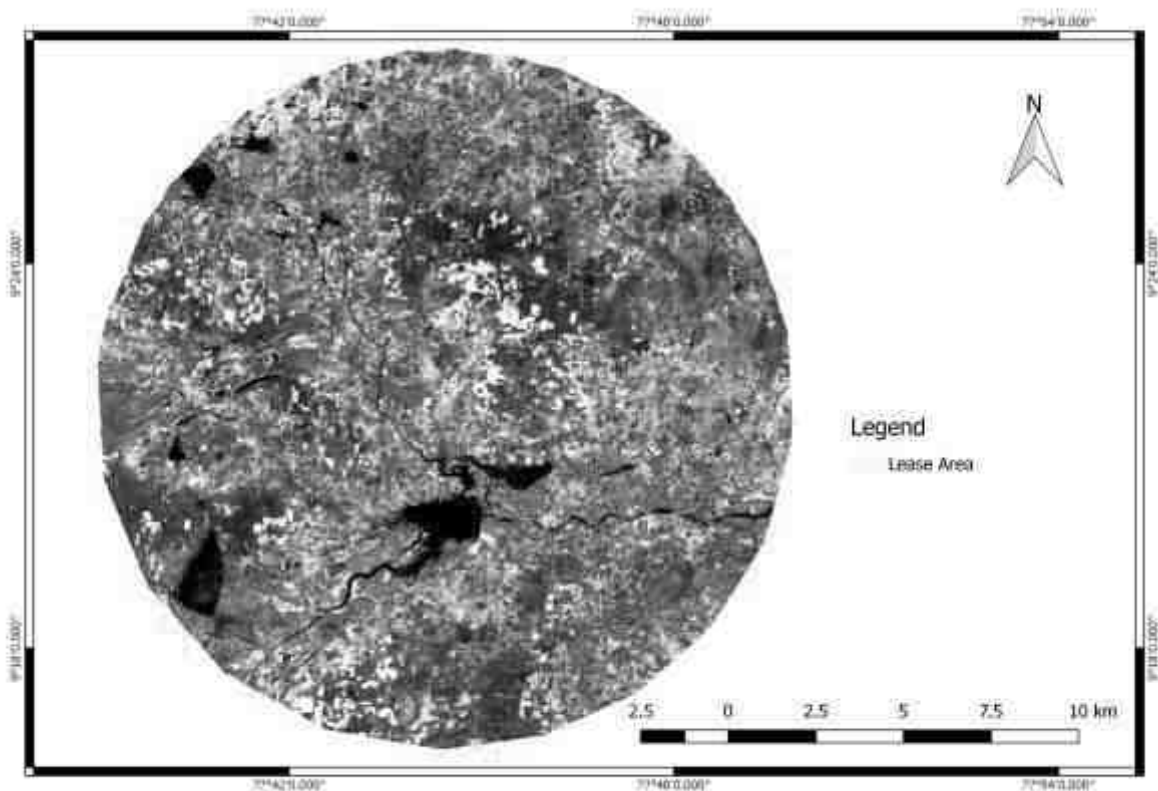
February 2022 (Figure No.3.14) has been used to generate the require landuse map showing their spatial pattern within the buffer area. The table showing data used for generation of information on landuse and subsequent GIS analysis is given below

**Table 3.20: RS satellite image used for the present study**

S.No	Type of Data	Date	Generated Map
1.	Landsat 8	Feb 2021	Landuse (LU) Map showing 10 Km buffer zone

Interpretation of satellite image requires understanding of relationship between image elements and their respective terrain elements. Since, in the present study, the landuse information is obtained using visual interpretation, an interpretation key is generated. The image elements such as color, tone, texture, size, shape and associated elements have been used to delineate various landuse categories. The landuse categorization and nomenclature used in the present study is based on the national level landuse classification system, which is adopted for the entire country as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India.

**Figure 3.14 : Landsat 8 Satellite Data of the Study Area**





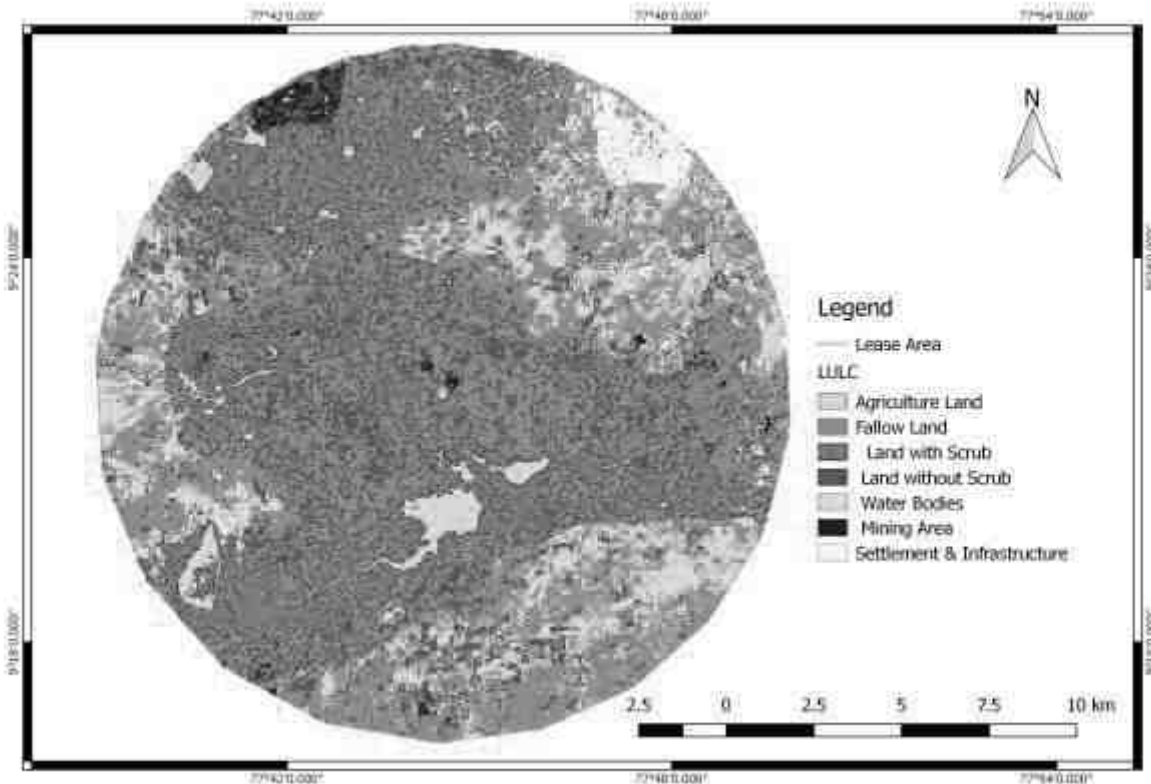
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**Table 3.21: Major Landuse Units of the Study Area**

S.No	Major Category	Landuse unit
1	Built-Up Land	Village, Town, Industrial / Vacant Area
2	Agricultural Land	Crop Land Fallow Land Plantation Farm Land
3	Forest Land	Open Scrub Forest
4	Waste Land Mining Area	Land With Scrub/ Land Without Scrub Barren Rocky/ Stony Waste Quarries / Abandoned Quarries
5	Waterbodies	Tanks/ Rivers / Streams

Such LandUse and Land cover (LULC) categories have been verified using field check and identified sample sites within the buffer area, verified on field and transferred into gis geo-coordinates using observation coordinates received from hand held GPS (global positioning system) instrument. Thus, an interpreted final landuse map has been generated (Figure No. 3.15) using above such elaborate procedure and transformed into GIS environment for its spatial distribution and area estimation. Spatial nature and extent of various landuse categories within the buffer area is discussed is given below:

**Figure 3.15: Map Showing Land Use Categories around 10km Buffer**



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**Table 3.22: Area Estimation of Landuse Categories in Buffer Zone**

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture	52.17	16.71
2	Fallow Land	126.84	38.10
3	Land With Scrub	78.72	25.22
4	Land Without Scrub	29.51	9.45
5	Water bodies	8.23	2.64
6	Mining Area/ Industries	4.10	1.31
7	Settlement / Infrastructure	20.56	6.56
	<b>Total</b>	<b>311.77</b>	<b>100</b>

From the above table it is seen that 16.73 % of the study area is agriculture land and 38.10 % are fallow land. Land with scrub constitutes 25.25 %.

**3.4.2 LAND USED BASED ON REVENUE RECORDS:**

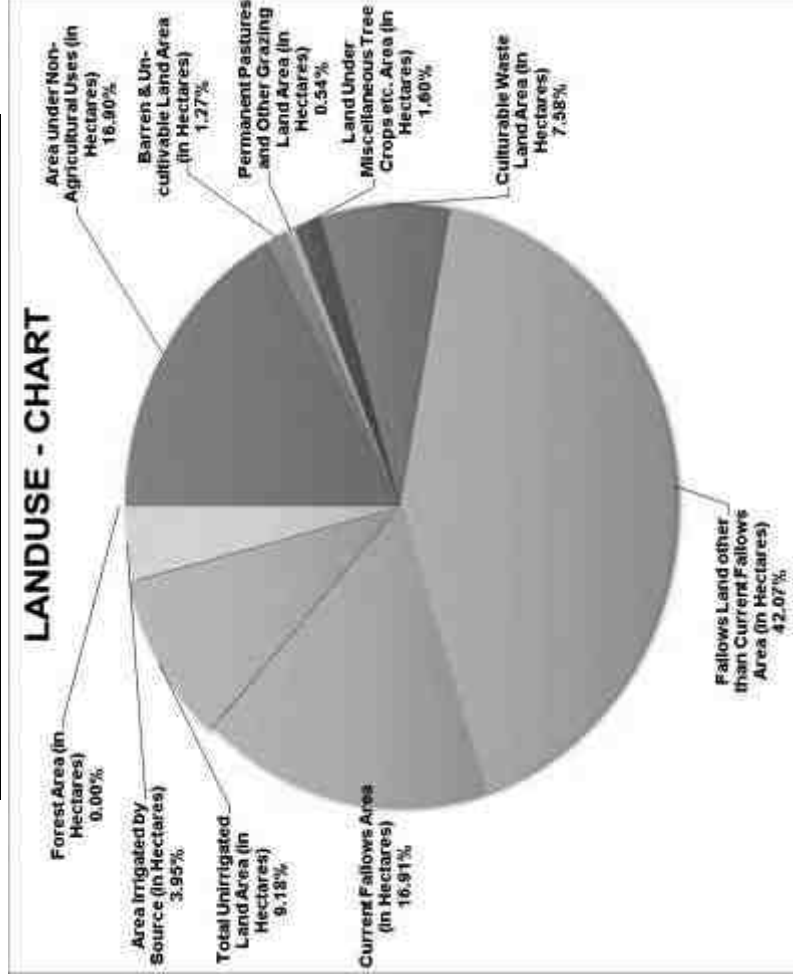
The lease area falls in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu state and the study area for the land use pattern (10 km radius) has been divided into four zones viz. Zone-I (0-2 km), Zone-II (2-5 km), Zone-III (5-10 km) and Zone-IV (0-10 km) respectively. The land use pattern of the study area falling within 10 km radius around the proposed project area is presented in Table no - 3.21. Village wise land use pattern is provided in **Annexure-11**.



**Table 3.23: Land Use Pattern of the Study Area Falling Within 10 Km Area in (Ha)**

Study Area	Total Geographical Area	Forest Area	Area under Non-Agricultural Uses	Barren & Un-cultivable Land Area	Permanent Pastures and Other Grazing Land Area	Land Under Miscellaneous Tree Crops etc. Area	Culturable Waste Land Area	Fallows Land other than Current Fallows Area	Current Fallows Area	Total Un irrigated Land Area	Area Irrigated by Source
0- 2 KM	2859.49	0	218.18	0	1.8	8.81	11.23	1459.59	779.28	273.58	107.02
2 - 5 KM	6481.54	0	1029.61	20	14.71	81.05	18.02	3956.65	533.59	710.74	117.17
5-10 KM	24401.89	0	4460.67	407.12	166.54	449.88	2527.17	8779.21	4391.46	2112.21	1107.63
0-10 KM	33742.92	0	5708.46	427.12	183.05	539.74	2556.42	14195.45	5704.33	3096.53	1331.82

**Figure 3.16: Landuse within the Buffer Zone Area**



### 3.5 BIOLOGICAL ENVIRONMENT:

Study of the biological environment of any area comprises of well-planned ecological survey for the floristic and faunal composition of the areas through various scientifically planned techniques.

#### 3.5.1 FLORA:

An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. The objective of the survey is as follows:

- ❖ Generate existing data from field observations of various terrestrial floristic occurrences.
- ❖ Collect secondary data from Government records as well as through discussion with Forest officials, knowledgeable public etc.,
- ❖ Compare the data with authentic past records to identify changes, if any.
- ❖ Identify the impact of project operations on the biological aspects.

To accomplish the above objectives, a general ecological survey covering an area of 10 km radius was conducted. The locations were identified for phyto-sociological aspects to assess the current status.

#### A.CORE ZONE:

The lease area is a non forest, private patta land with thorny bushes and partly minedout area. The lease area is dominated with *Acacia nilotica* & *Prosopis juliflora*. The detailed list of plants found in the core zone are given in Table no – 3.23.

**Table 3.24: List of Floristic Species in the Core Zone**

SI.No	Species Name	Common Name	Family
<b>Trees</b>			
1	<i>Prosopis juliflora</i>	Cimaikkaruvel	Fabaceae
2	<i>Acacia nilotica</i>	Karuvelan	Fabaceae
<b>Shrubs</b>			
1	<i>Ricinus communis</i>	Amanakku	Euphorbiaceae
2	<i>Calotropis gigantea (L.) R. Br.</i>	Yerukku	Asclepiadaceae
3	<i>Jatropha glandulifera</i>	Vellaikattukottai	Euphorbiaceae
4	<i>Lantana camara L.</i>	Unni chedi	Lythraceae
<b>Herbs</b>			

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Sl.No	Species Name	Common Name	Family
1	<i>Abutilon indicum (L.) Sweet</i>	Thuththi	Malvaceae
2	<i>Anisomeles indica</i>	marutti	Lamiaceae
3	<i>Achyranthes aspera L.</i>	Nayuruvi	Amaranthaceae
4	<i>Cassia tora L.</i>	Thagarai	Caesalpiaceae

**B. BUFFER ZONE:**

The Dominated species in the buffer zone are Azadirachta indica, Albizia lebbeck Murraya koenigii Borassus flabellifer, Sygygium cumuni Prosopis juliflora, Gmelina arborea, Acacia auriculiformis etc. Patches of coconut farms Sunflower, Banana, Nithiyakalani cultivation, are also observed in the study area.

**Table 3.25: List of Floristic Species in the Buffer Zone**

Sl.No	Species Name	Family	Local Name
<b>Trees</b>			
1	<i>Mangifera indica</i>	Anacardiaceae	Maamaram
2	<i>Atalantia monophylla</i>	Rutaceae	Kattu Elumeachi
3	<i>Psidium guava</i>	Myrtaceae	Koyya
4	<i>Sygygium cumuni</i>	Anacardiaceae	Naval
5	<i>Mimusops elengi</i>	Sapotaceae	Magizhamboo
6	<i>Leucaena leucocephala</i>	Fabaceae	Subabul
7	<i>Phyllanthus emblica</i>	Euphorbiaceae	Nelli
8	<i>Morinda tinctoria</i>	Rubiaceae	Nuna
9	<i>Tectona grandis</i>	Verbenaceae	Tekku
10	<i>Murraya koenigii</i>	Rutaceae	Curry leaf
11	<i>Dodonaea viscosa</i>	Sapindaceae	viraali
12	<i>Terminalia catappa</i>	Combretaceae	Badam Tree
13	<i>Borassus flabelliformis</i>	Arecaceae	Panna-maram
14	<i>Peltophorum pterocarpum</i>	Fabaceae	Kilukiluppai
15	<i>Pithecellobium dulce</i>	Fabaceae	Kodukkapuli
16	<i>Gmelina arborea</i>	Lamiaceae	Kumalaamaram
17	<i>Acacia auriculiformis</i>	Fabaceae	Pencile tree
18	<i>Samanea saman</i>	Fabaceae	Amaivagai
19	<i>Thespesia populnea</i>	Malvaceae	Puvarasu
20	<i>Musa paradisiaca</i>	Musaceae	Valzhlai
21	<i>Azadirachta indica</i>	Meliaceae	Vembu
22	<i>Albizia lebbeck</i>	Fabaceae	Vagai
23	<i>Polyalthia longifolia</i>	Annonaceae	Nietilingam
24	<i>Aegle marmelos</i>	Rutaceae	Vilvamaram
25	<i>Cocus nucifera</i>	Arecaceae	Tennai
26	<i>Pongamia pinnata</i>	Fabaceae	Pungai
27	<i>Acacia leucophloea</i>	Fabaceae	Valvelam
28	<i>Madhuca longifolia</i>	Sapotaceae	Iluppai
29	<i>Senna siamea</i>	Fabaceae	Manjal konrai
30	<i>Delonix regia</i>	Fabaceae	Gulmohar
31	<i>Tamarindus indica</i>	Fabaceae	Puli
32	<i>Cassia fistula</i>	Fabaceae	Konrai



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SI.No	Species Name	Family	Local Name
33	<i>Annona squamosa</i>	Annonaceae	Siththa
34	<i>Citrus limon</i>	Rutaceae	Lemon
35	<i>Acacia nilotica</i>	Fabaceae	Karuvelan
36	<i>Carica papaya</i>	Caricaceae	Pappali
37	<i>Ficus hispida</i>	Moraceae	Aarasu
38	<i>Phoenix sylvestris</i>	Arecaceae	Eeachamaram
39	<i>Ficus religiosa</i>	Moraceae	Poarasamaram
40	<i>Casuarina equisetifolia</i>	Casuarinaceae	Savukku
41	<i>Delonix elata</i>	Fabaceae	Perungondrai
42	<i>Manilkara zapota</i>	Sapotaceae	Sappota
43	<i>Albizia amara</i>	Fabaceae	Vagai
44	<i>Caesalpinia pulcherrima</i>	Fabaceae	Mayilkondrai
45	<i>Anacardium occidentale</i>	Anacardiaceae	Munthiri
46	<i>Prosopis juliflora</i>	Fabaceae	Seemai karuvel
47	<i>Ficus benghalensis</i>	Moraceae	Aalamaram
48	<i>Moringa oleifera</i>	Moringaceae	Murungai
49	<i>Terminalia arjuna</i>	Combretaceae	Marudha Maram
<b>Shrubs</b>			
1	<i>Calotropis gigantea</i>	Apocynaceae	Earukku
2	<i>Hibiscus rosa-sinensis</i>	Malvaceae	Semparuthi
3	<i>Lantana camara</i>	Verbenaceae	Nuni
4	<i>Jatropha glandulifera</i>	Euphorbiaceae	Vellaikattukottai
5	<i>Sida cordifolia</i>	Malvaceae	<i>Sida plant</i>
6	<i>Ixora casei</i>	Rubiaceae	Idlipoo
7	<i>Cassia auriculata</i>	Fabaceae	Aavarampoo
8	<i>Nerium indicum</i>	Apocynaceae	Arali
9	<i>Tecoma stans</i>	Bignoniaceae	<i>Yellow trumpetbush</i>
10	<i>Ricinus communis</i>	Euphorbiaceae	<i>Amanakku</i>
11	<i>Ziziphus jujuba</i>	Rhamnaceae	<i>Elan thai</i>
12	<i>Justicia adhatoda</i>	Acanthaceae	Adathoda
13	<i>Boerhaavia diffusa</i>	Nyctaginaceae	Kagithapoo
14	<i>Vitex negundo</i>	Verbinaceae	Vanili
15	<i>Lawsonia inermis</i>	Lythraceae	Maruthani
16	<i>Rosa indica</i>	Rosaceae	<i>Rose</i>
<b>Herbs</b>			
1	<i>Cleome viscosa</i>	Cleomaceae	<i>Naai velai</i>
2	<i>Tridax procumbens</i>	Asteraceae	Vettukai poondu
3	<i>Tragia involucrata</i>	Euphorbiaceae	Kanchori
4	<i>Solanum incanum</i>	Solanaceae	Karimulli
5	<i>Acanthospermum hispidum</i>	Asteraceae	<i>Gokul kanta</i>
6	<i>Ocimum americanum</i>	Lamiaceae	Nai Thulasi
7	<i>Solanum xanthocarpum</i>	Solanaceae	Kandangkattari
8	<i>Sida acuta</i>	Malvaceae	Palambasi
9	<i>Solanum nigrum</i>	Solanaceae	<i>Manatthakalli</i>
10	<i>Ocimum tenuiflorum</i>	Lamiaceae	Thulasi
11	<i>Acalypha indica</i>	Amaranthaceae	<i>Kupaimeni keeri</i>
12	<i>Leucas aspera</i>	Lamiaceae	<i>Thumbai</i>
13	<i>Parthenium hysterophorus</i>	Asteraceae	<i>Parthenium</i>
14	<i>Andrographis paniculata</i>	Acanthaceae	<i>Kirayt</i>
15	<i>Tephrosia purpurea</i>	Fabaceae	Vayal poondu



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SI.No	Species Name	Family	Local Name
16	<i>Achyranthes aspera</i>	Amaranthaceae	<i>Nayuruvi</i>
17	<i>Sida rhombifolia</i>	Malvaceae	<i>Kurundotti</i>
18	<i>Phyllanthus niruri</i>	Phyllanthaceae	<i>Keelzhaneeli</i>
19	<i>Amaranthus viridis</i>	Amaranthaceae	<i>Creen amaranth</i>
20	<i>Anisomeles malabarica</i>	Lamiaceae	<i>Peyimarutti</i>
21	<i>Argemone mexicana</i>	Papaveraceae	<i>Mexican poppy</i>
22	<i>Anisomeles indica</i>	Lamiaceae	<i>marutti</i>
23	<i>Croton sparsiflorus</i>	Euphorbiaceae	<i>Poodu sedi</i>
24	<i>Vinca rosea</i>	Apocynaceae	<i>Nithiyakalyani</i>
<b>Climbers</b>			
1	<i>Asparagus racemosus</i>	Asparagaceae	<i>Tannir-vittan</i>
2	<i>Abrus precatorius</i>	Fabaceae	<i>Kundumani</i>
3	<i>Cardiospermum halicacabum</i>	Sapindaceae	<i>Mudakathan</i>
4	<i>Capparis rotundifolia</i>	Capparaceae	<i>Thoratti</i>
5	<i>Cissus quadrangularis</i>	Vitaceae	<i>Pirandai</i>
6	<i>Coccinia indica</i>	Cucubitateae	<i>Kovai</i>
7	<i>Jasminum angustifolium</i>	Oleaceae	<i>Uccimalligai</i>
<b>Crops</b>			
1	<i>Sorghum vulgare</i>	Poaceae	<i>Solam</i>
2	<i>Sesbania grandiflora</i>	Fabaceae	<i>Agati</i>
3	<i>Gossypium hirsutum</i>	Malvaceae	<i>Paruththi</i>
4	<i>Capsicum annuum</i>	Solanaceae	<i>Red chilli</i>
5	<i>Jasminum officinale</i>	Oleaceae	<i>Malli</i>
6	<i>Musa paradisiaca</i>	Musaceae	<i>Valzhai</i>
7	<i>Helianthus annuus</i>	Asteraceae	<i>Sun flower</i>
8	<i>Solanum melongena</i>	Solanaceae	<i>Kaththarii</i>
<b>Grasses</b>			
1	<i>Cyperus rotundus</i>	Cyperaceae	<i>korai pullu</i>
2	<i>Chloris barbata</i>	Poaceae	<i>Kodai pullu</i>
3	<i>Cynodon dactylon</i>	Poaceae	<i>Arugampillu</i>

### 3.5.2 FAUNA:

**Methodology:** Both direct and indirect observation methods were used to survey the fauna. Point Survey Method was used to study the Bird diversity. Besides, discussion with local villagers Collection secondary data from Government records, published reports as well as through discussion with Forest officials, knowledgeable public were used for the study.

**Observation:** There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. No wild mammalian species was directly sighted during the field survey. There is no Schedule I animals in the buffer zone area. The list of fauna within the study area is given in Table No – 3.26.



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**Table 3.26: List of Fauna in the Buffer Zone**

S.No	Common Name	Scientific name	IWPA, Schedule
<b>Mammals</b>			
1	Wild Boar	Sus scrofa cristatus	III
2	Common Indian Hare	Lepus ruficaudatus	IV
3	Indian Palm squirrel	Funambus palmarum	IV
4	Indian Grey Mongoose	Herpestes edwardsii	II
5	Bonnet macaque	Macaca radiata	II
<b>Birds</b>			
1	Common Quail	Coturnix coturnix	IV
2	Rose-ringed Parakeet	Psittacula krameri	IV
3	Common Babbler	Turdoides caudatus	IV
4	House Sparrow	Passer domesticus	IV
5	Common Crow	Corvus splendens	V
6	Black Drongo	Dicrurus macrocercus	IV
7	Little Cormorant	Phalacrocorax niger	IV
8	Indian Cuckoo	Cuculus micropterus	IV
9	Red-vented Bulbul	Pycnonotus cafer	IV
10	Spotted Dove	Streptopelia chinensis	IV
11	Indian Pond Heron	Ardeola grayii	IV
12	Purple-rumped Sunbird	Nectarinia zeylonica	IV
13	Green Bee-eater	Merops orientalis	IV
14	Common Swift	Apus apus	IV
15	Little Egret	Egretta garzetta	IV
16	Common Myna	Acridotheres tristis	IV
17	Cattle Egret	Bubulcus ibis	IV
18	Common Kingfisher	Alcedo atthis	IV
19	Black Kite	Milvus migrans	IV
<b>Reptiles</b>			
1	Common Indian krait	Bungarus caeruleus	II
2	Garden Lizard	Calotes versicolor	IV
<b>Amphibians</b>			
1	Common Indian toad	Bufo melanostictus	IV

### 3.6 HYDROGEOLOGICAL STUDY:

This section delves into the study of the hydrogeological scenario of the study area to evaluate the impact of mining activities on the nearby areas. The study area is considered to understand the nature of the general hydrogeological conditions of the area.

#### 3.6.1 PHYSIOGRAPHY AND DRAINAGE:

**Physiography:** The lease area is a barren, patta land which is covered with scrubs and thorny bushes and part of lease area is already mined out . There is no major vegetation found in the lease area. The lease area is a plain land that is sloping towards the south eastern side of the area.

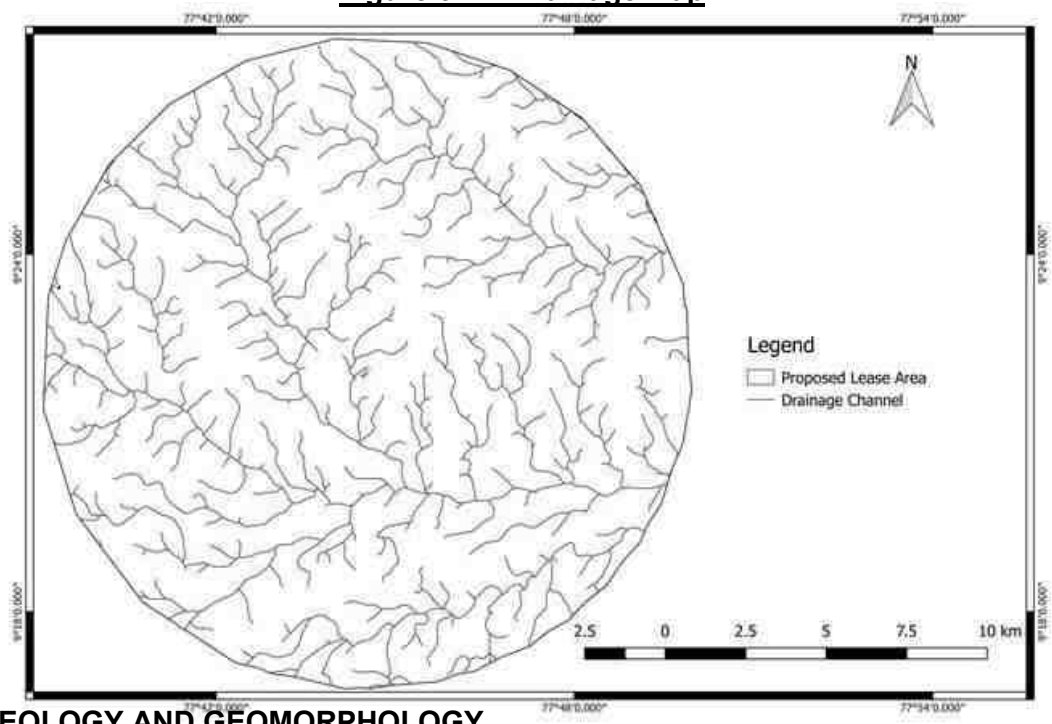




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**Drainage:** There are no major perennial water bodies in proximity to the lease area. There are a few tanks located in the study area. The drainage map prepared from the survey of India topographic maps shows the presence of few streams running in a dendritic pattern

**Figure 3.17: Drainage Map**



### 3.6.2 GEOLOGY AND GEOMORPHOLOGY

**Geology:** The regional geology of the study area is shown below in Figure 3.18. The type of rock formation in the core and buffer zone is composed of Migmatite Gneissic complex. The lease area falls under Migmatite Gneissic complex category.

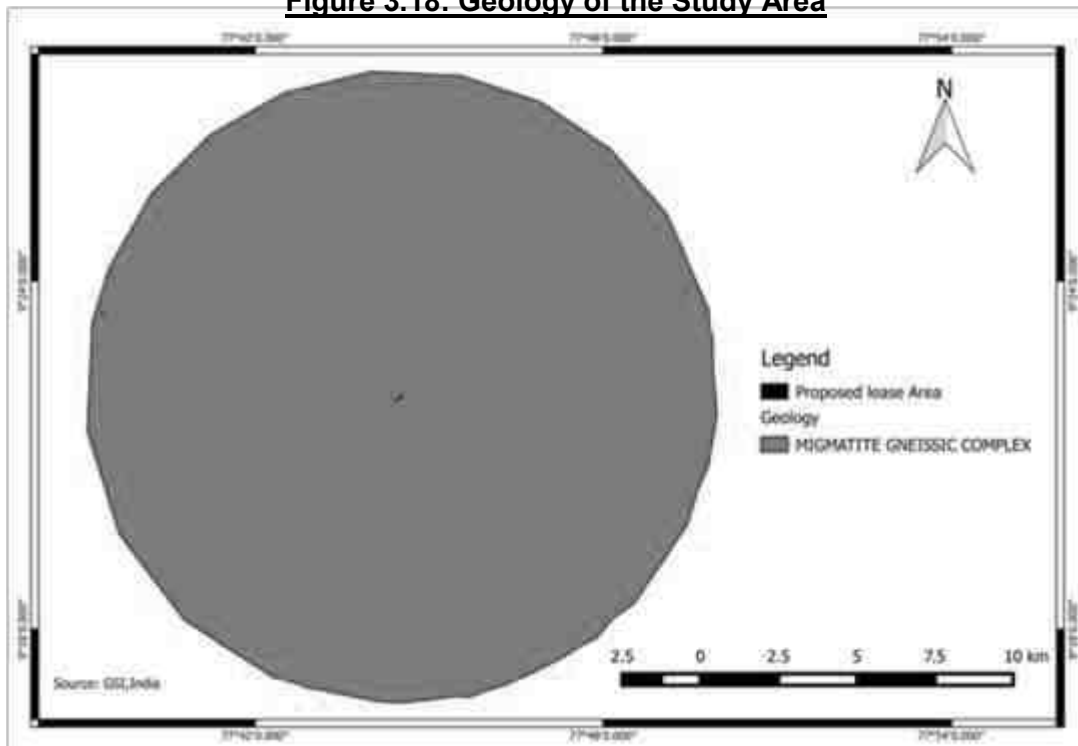
**Geomorphology:** The buffer zone consists of different regions of varying geomorphologies. Pediment Pediplain complex dominate the study area, while the lease area also falls in the Pediment Pediplain complex.

**Lithology:** The study area is mainly dominated by Hornblende-Biotite Gneiss. lithology of Core & Buffer Zone map is given below.

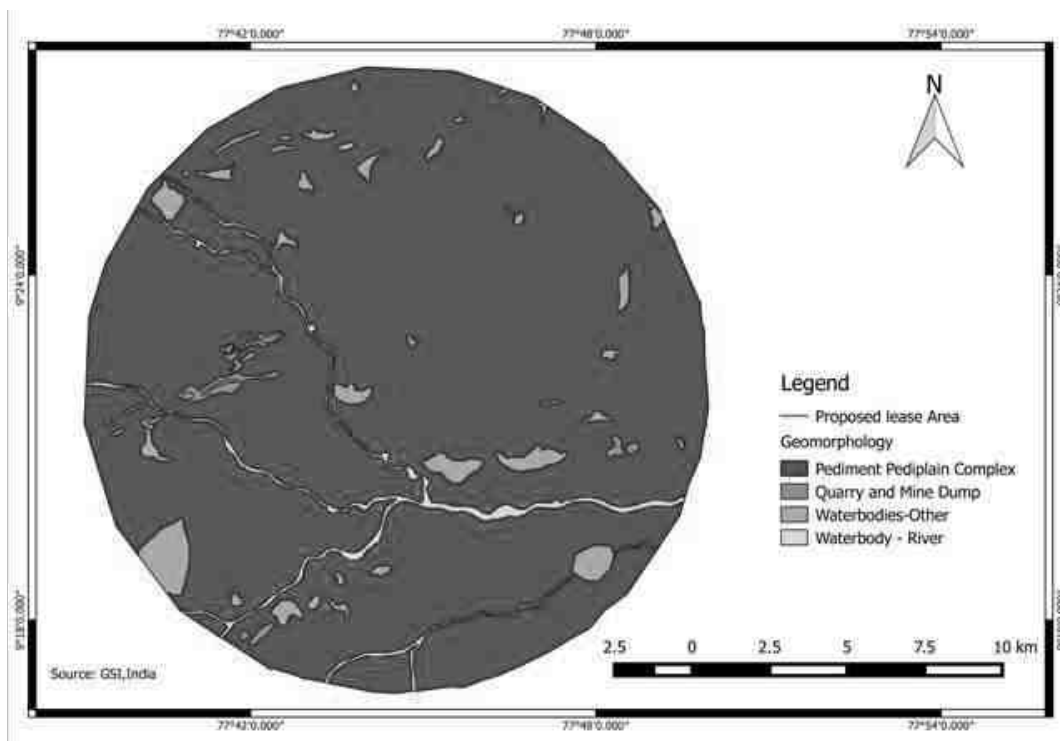
**Soil and Irrigation:** The study area is characterized by Vertisols, Alfisols, ultisols and Entisols. The project area was dominated with Vertisols type of soil and buffer zone was dominated with Vertisols.

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**Figure 3.18: Geology of the Study Area**

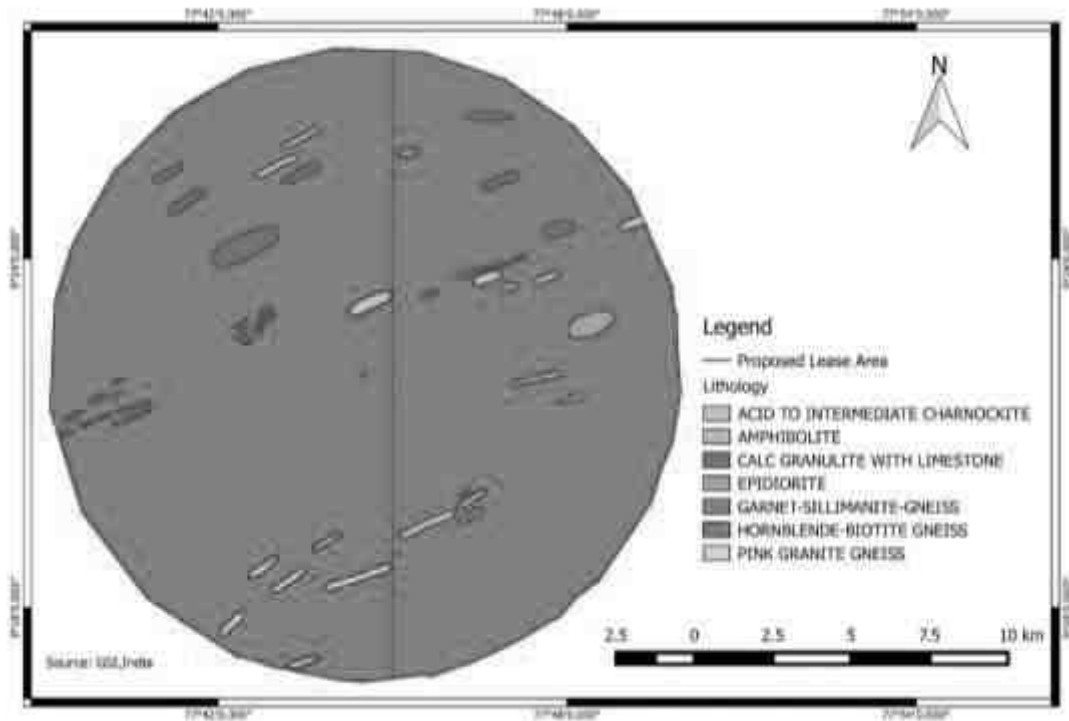


**Figure 3.19: Geomorphology of the study area**

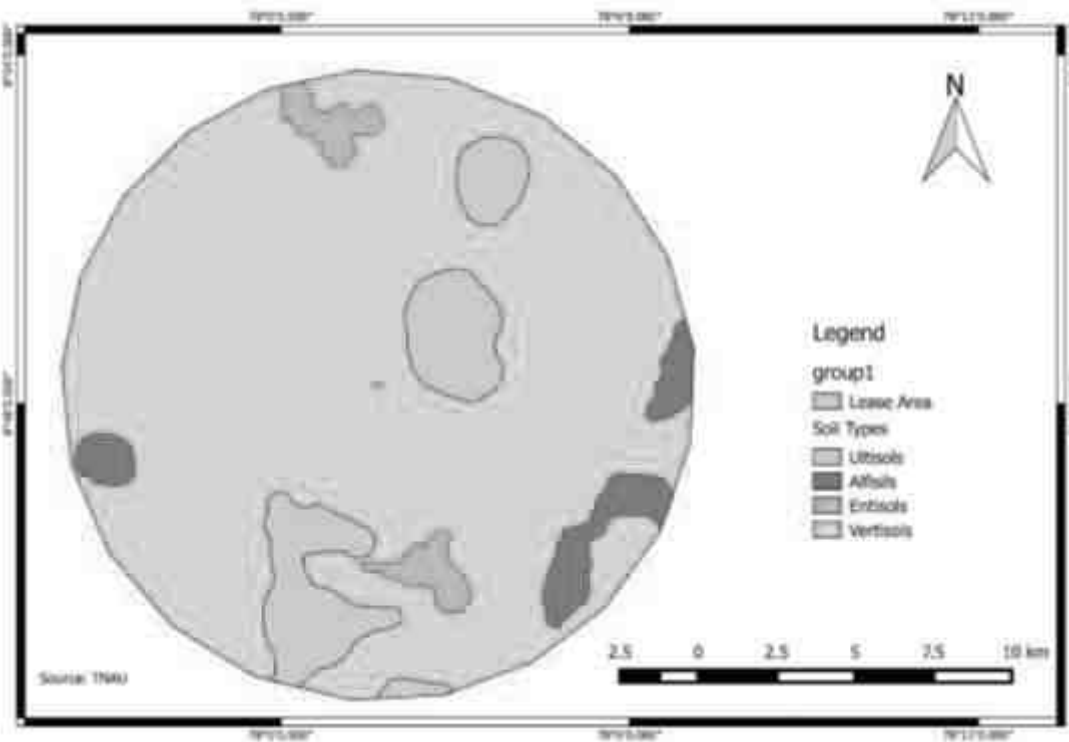


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**Figure 3.20: Lithology of the study area**



**Figure 3.21: Soil Map of the study area**



**3.6.3 WATER TABLE OF THE AREA:**

Based on the depth to water level data obtained from the India-WRIS, Department of Water Resources, Ministry of Jal Shakti, Viruthunagar District, Tamil Nadu the following is observed.

**Table 3.27: General Trend of Depth to Water Level**

Year	Depth to Water Level (m bgl)		Wells Monitored	
	Pre-Monsoon	Post-Monsoon	Pre-Monsoon	Post-Monsoon
2015	2.67 - 9.65	1.74 - 7.94	3	3
2016	3.5 - 7.66	4.07 - 9.9	4	3
2017	-	2.27- 4.88	-	2
2018	4.03-10.38	6.35-8.5	3	2

Study of the depth to water table in 6 locations (wells) in the nearby areas show that the wells are as deep as 40ft to 60ft. Water level after good monsoon reaches almost near the surface level whereas it lowers down substantially during summer season. Bore wells are 300-400 ft deep, give better yield post monsoon where as the yield becomes very less later.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels

From the Geophysical survey, it is found that the subsurface litho units are gravel, weathered layers poorly fractured and terminated with hard and compact massive rocks with fully devoid of fractures.

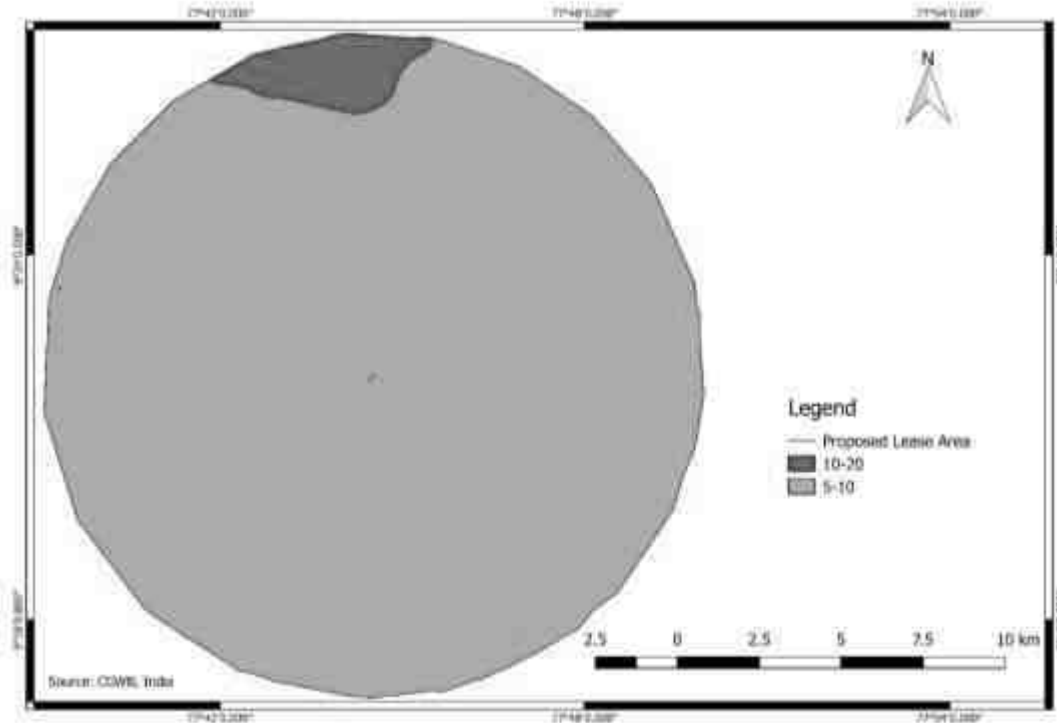
The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected.

**Pre-monsoon Depth to water level (April)** The depth to water level data and map shows that the pre-monsoon (April) depth to water level in project area ranges between 5.0 to 20.0 m bgl. (Figure No.3.22)

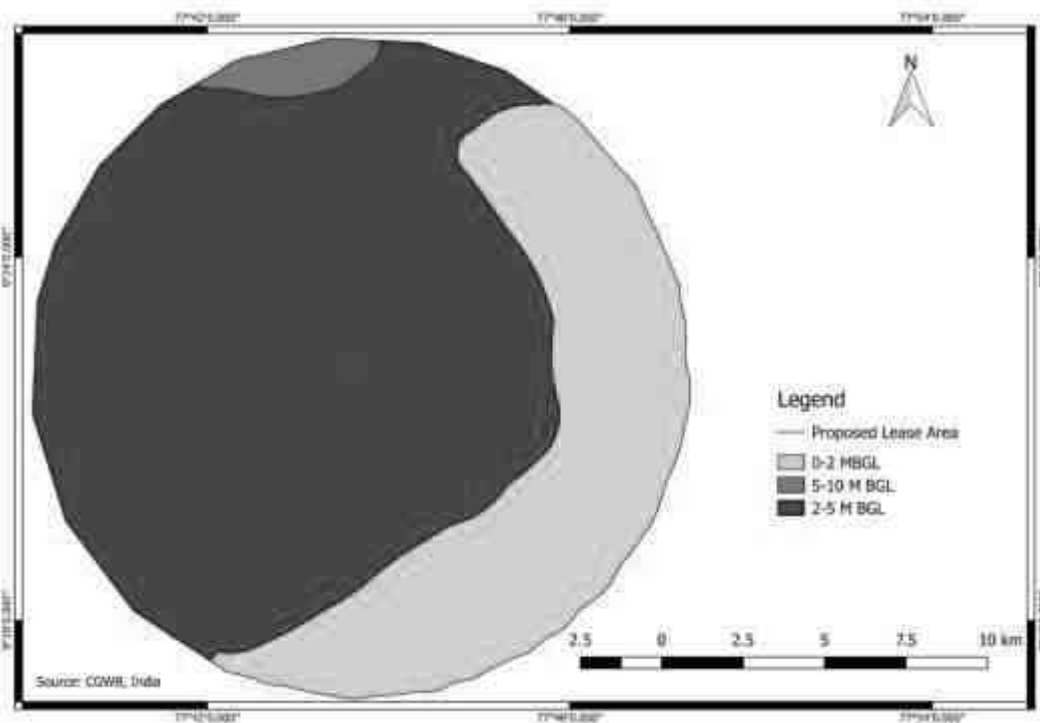
**Post monsoon depth to water level (November):** The data shows that depth to water level during post monsoon (November) varies from 2.0 to 10.0 m bgl in the wells monitored. (Figure No.3.23)

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**Figure 3.22: Pre Monsoon Water Level**

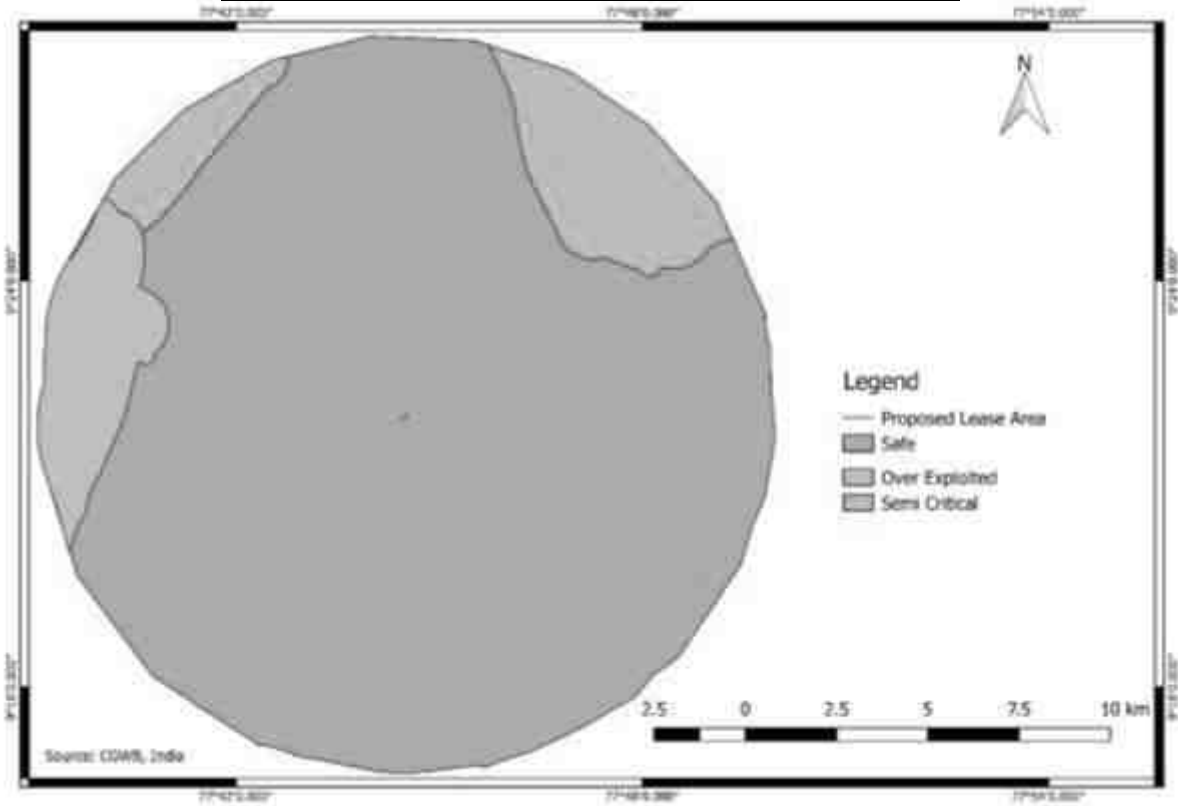


**Figure 3.23: Post Monsoon Water Level**



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**Figure 3.24: Stage of Groundwater Development Map**



Based on the report published by National Water Mission, Ministry of Jal Shakti, Department of Water Resources, RD & GR, the stage of ground water development for this area falls in “Safe” category and its details are given in Para 4.3.3.1, Chapter – IV.

\* \* \* \* \*

## **CHAPTER 4**

### **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

#### **4.1 GENERAL**

In this project Semi – Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc., and the details of the same are elaborated in this chapter.

#### **4.2 AIR ENVIRONMENT:**

##### **4.2.1 IMPACTS DUE TO PROJECT OPERATION:**

The existing ambient air quality in the area has been described in Chapter-III. The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

- ❖ Excavation of material.
- ❖ Movement of HEMM such as Excavators, tippers etc.
- ❖ Loading and unloading operation
- ❖ Transportation

Besides, Gas emission will occur as a result of operation of diesel driven mining equipment, compressors, transporting vehicles, etc.

Particulate matter smaller than 10 microns, referred to as PM<sub>10</sub>, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchial Asthma, Irritation of mucus membranes of eyes, etc. Particles smaller than 2.5 micrometers (PM<sub>2.5</sub>), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other organs.

Besides the above mentioned fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO<sub>2</sub>, NO<sub>x</sub>, CO etc., from diesel driven mining equipment, generator sets, etc. Larger suspended particles are generally filtered in the nose and throat and do not cause problems. Higher concentration of SO<sub>2</sub>, NO<sub>x</sub>, CO may cause some health effect on the human



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beings exposed to it. In case of this mine, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

**Table 4.1: Impact and Mitigation Measures – Air Environment**

S.No	Activity	Consequence	Mitigation Measures
1	Drilling	Dust Emanation	Usage of Drill bits in good condition
			Covering of drill holes with wet cloth
			Usage of sharp drill bits for drilling of holes.
			Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Instantaneous dust emanation	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
			Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
			Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
			Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Dust emanation, Gaseous Emission	HEMM will be operated as per the manufacturer's guidelines
			Enclosures for operator cabin.
			Imparting sufficient training to operators on safety and environmental parameters.
			Proper maintenance of hauling equipments.
4	Transportation	Dust emanation, Gaseous Emission	Avoiding overloading of dumpers.
			Regular wetting of transport road using mobile water tanker.
			Proper maintenance of haul road and other roads
			Setting up of tyre wash facility in the transport road.
			Avoiding overloading of tippers
			Covering of loaded tippers with tarpaulins during transportation
5	Others	Dust emanation, Gaseous Emission	Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
			Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
			Green netting will be carried out around the lease periphery on all sides.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.





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Considering that the quantum of production is less, only 1 excavator, 4 tippers will be engaged. These equipments will be properly and regularly maintained. Besides, as mentioned earlier, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1150 number of plants will be planted in and around the lease area.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Details of the modeling study / estimation including the modeling technique and post project air quality values are elaborated in the following paras.

#### **4.2.2 AIR QUALITY IMPACT PREDICTION:**

The model simulations are done for the air pollutant arising from the mining operations, namely, PM<sub>10</sub>, PM<sub>2.5</sub>. **Ground Level Concentration** (GLC) have been computed using hourly meteorological data.

**Table 4.2: Emission Sources**

<b>ACTIVITY</b>	<b>SOURCE TYPE</b>
A. Mining operations	Open pit
B. Transportation	Line

##### **4.2.2.1 Emission Factors**

Quantification of particulate emissions has been carried out by the emission factor technique. Emission factor is a statistical average of the rate at which a pollutant is released during an activity. This factor when multiplied by the level of that activity in a given situation will give the overall effect. Fugitive emissions have been predicted by using standard equations given and suggested by AP-42, USEPA(1998), Coal S&T Project and for mining & allied activities and other factors. The modeling is done for the peak production to know the worst scenario. The details of the emission factors used for the same is provided below:



**Table 4.3: Emission Factors**

S.No	Activity	PM10	PM2.5	Unit
1	Ore Loading	$1.5 \times 10^{-3}$	$2.1 \times 10^{-4}$	Kg/T
2	OB Loading	$1.4 \times 10^{-4}$	$1.5 \times 10^{-5}$	Kg/T
3	Hauling inside lease area	0.19	0.019	g/VKT
4	Drilling	0.1	0.04	Kg/hole

**4.2.2.2 Emission Rates:**

Based on the emission factors, after adopting necessary control measures like dust suppression, Proper maintenance of HEMM, using better quality diesel, using latest equipment, proper maintenance of roads, etc. the expected emission rate due to various operations in this project is calculated and is given below:

**Table 4.4: Emission Rate**

ACTIVITIES/POLLUTANTS	PM <sub>10</sub> (g/sec)	PM <sub>2.5</sub> (g/sec)
Ore Loading	0.03	0.00
Drilling	0.12	0.05
Hauling inside lease area	0.12	0.02
<b>Total</b>	<b>0.27</b>	<b>0.07</b>

**A. Emission Source Coordinates:** The center of mine was assumed (0, 0) in the mathematical modeling.

**B. Meteorological Conditions Used In Predictions:** The hourly meteorological data has been generated for Winter Season (Dec 2022 to Feb 2023) and the same has been used in the predictions.

**4.2.2.3 Results and Discussions**

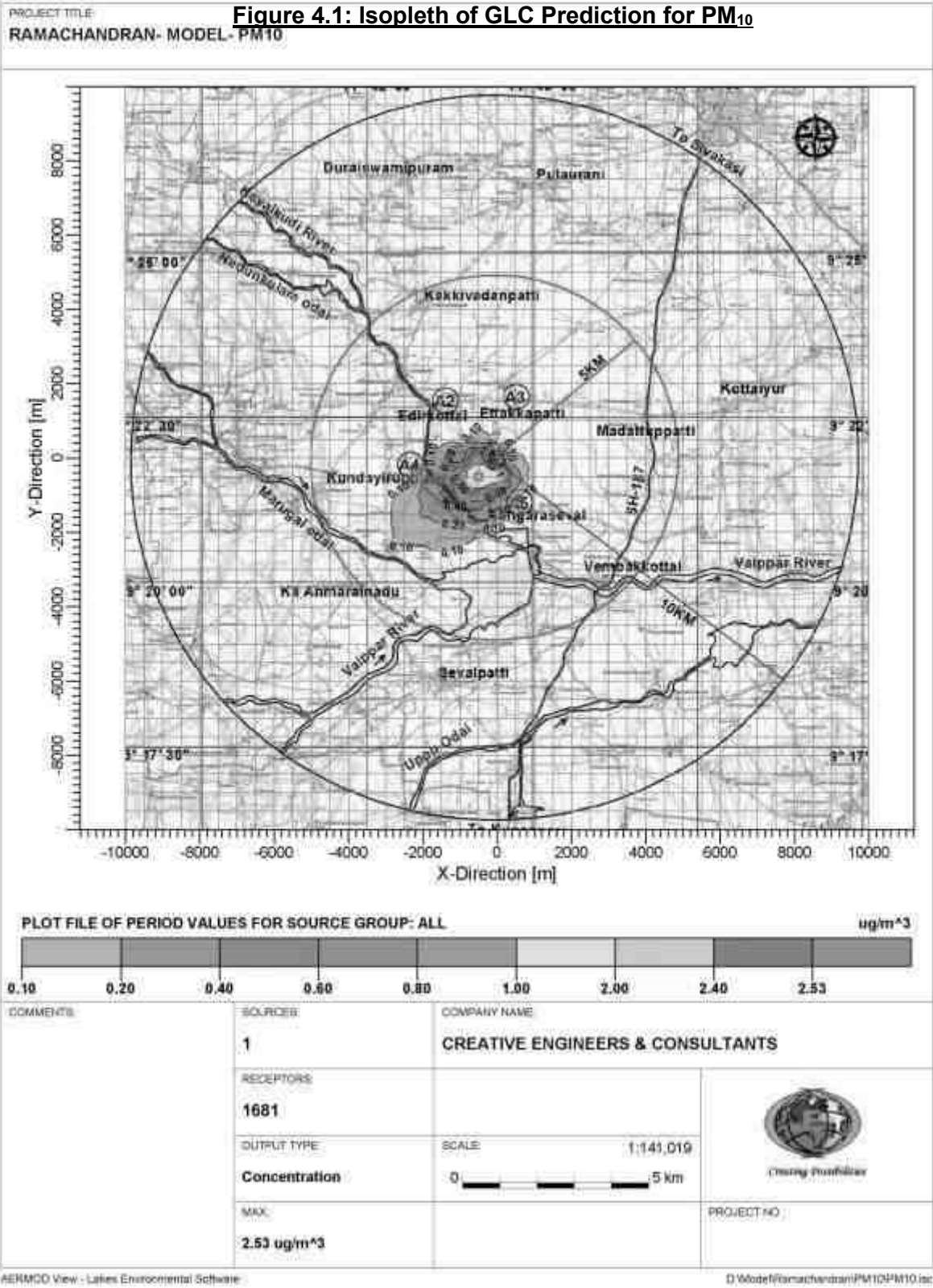
**Table 4.5: Peak Incremental Concentration**

S.No	Parameters	Peak incremental concentration $\mu\text{g}/\text{m}^3$
1	PM <sub>10</sub>	2.53
2	PM <sub>2.5</sub>	0.82

It is observed that the peak incremental concentration for PM<sub>10</sub>, PM<sub>2.5</sub> occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The Isopleths of PM<sub>10</sub>, PM<sub>2.5</sub> concentrations with control measures scenario have also been drawn and these are given in **Figure No.4.1 and 4.2**. The incremental and predicted concentrations at the locations of ambient air quality have been discussed in the following section.

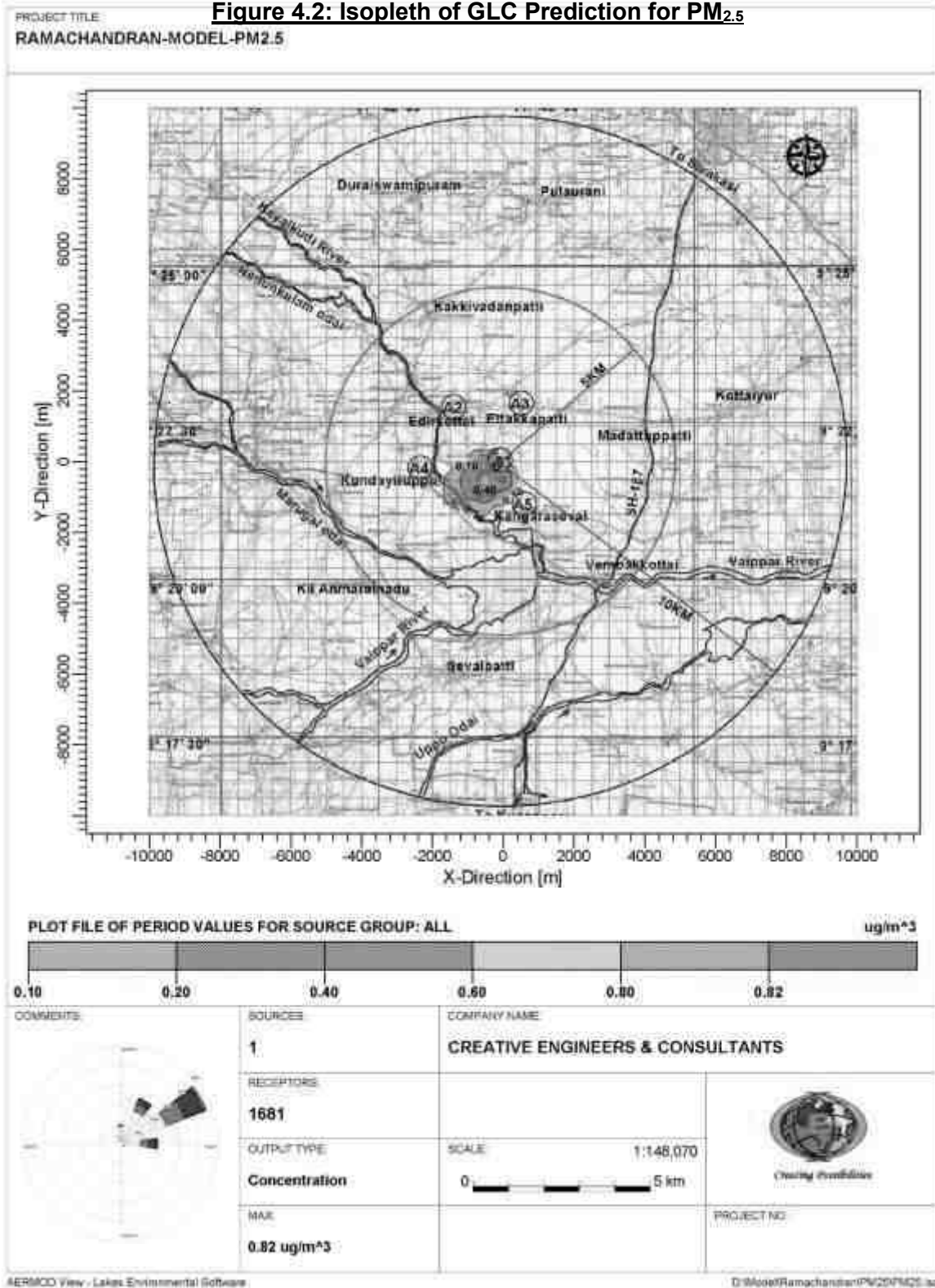


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**Figure 4.2: Isopleth of GLC Prediction for PM<sub>2.5</sub>**



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**4.2.2.4 Predicted Ambient Air Quality:**

The post project Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.6 to 4.7.

**Table 4.6: Concentrations Of PM<sub>10</sub> after Project Implementation**

Values in µg/m<sup>3</sup>

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1Near Mine Lease Area	68.3	2.5	70.5	-
2	A2-Edirkottai Village	60.2	<1.0	61.2	100
3	A3-Ettakkapatti Village	51.4	<1.0	52.4	
4	A4-Kundayiruppu Village	50.6	<1.0	51.6	
5	A5-Kangerseval Village	54.4	<1.0	55.4	

**Table 4.7: Concentrations Of PM<sub>2.5</sub> after Project Implementation**

Values in µg/m<sup>3</sup>

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1Near Mine Lease Area	33.6	<1.0	34.6	-
2	A2-Edirkottai Village	28.9	<1.0	29.9	60
3	A3-Ettakkapatti Village	24.1	<1.0	25.1	
4	A4-Kundayiruppu Village	24	<1.0	25.0	
5	A5-Kangerseval Village	25.8	<1.0	26.8	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM<sub>10</sub> are in the range of 51.6 µg/m<sup>3</sup> to 70.5 µg/m<sup>3</sup> and with respect to PM<sub>2.5</sub> are in the range of 25.0 µg/m<sup>3</sup> to 34.6 µg/m<sup>3</sup> which are within the statutory limits in each case. For preservation of environment in this mine strict enforcement of management schemes and regular air quality monitoring will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

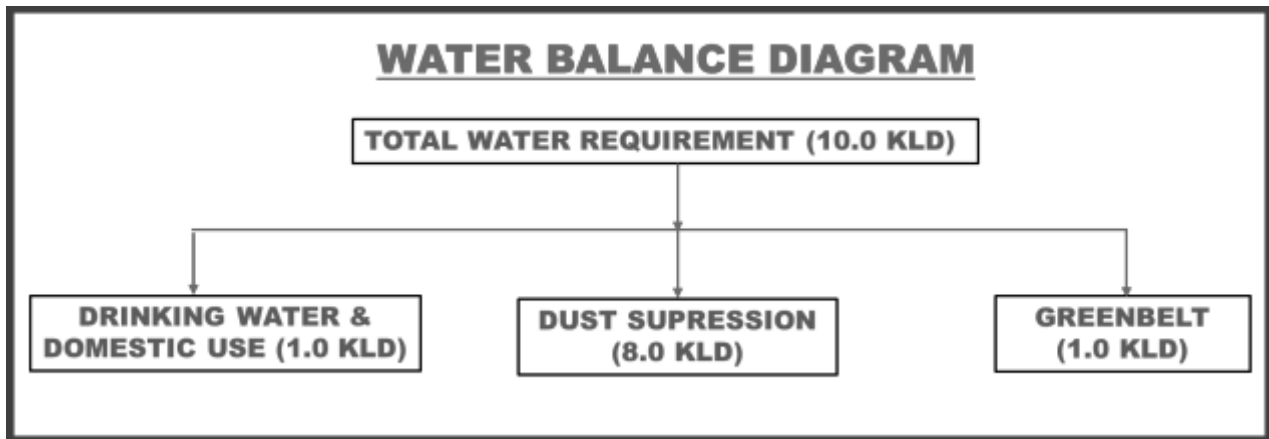


### 4.3 WATER ENVIRONMENT:

#### 4.3.1 WATER REQUIREMENT:

The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in **Figure No 4.3**.

**Figure 4.3: Water Balance Diagram**



#### 4.3.2 SOURCES OF WATER POLLUTION:

The existing water environment showing water quality at different sampling stations in the area has been described in Chapter-III.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhea, jaundice, dysentery, typhoid, etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants.

The major sources of water pollution normally associated due to mining and allied operations are:

- a. Domestic effluent.
- b. Washouts from stockpile if any.
- c. Disturbance to drainage course in the project area
- d. Generation of mine pit water pumped out from deeper workings if any.

### 4.3.3 TREATMENT SCHEME:

#### A. Generation of domestic effluent:

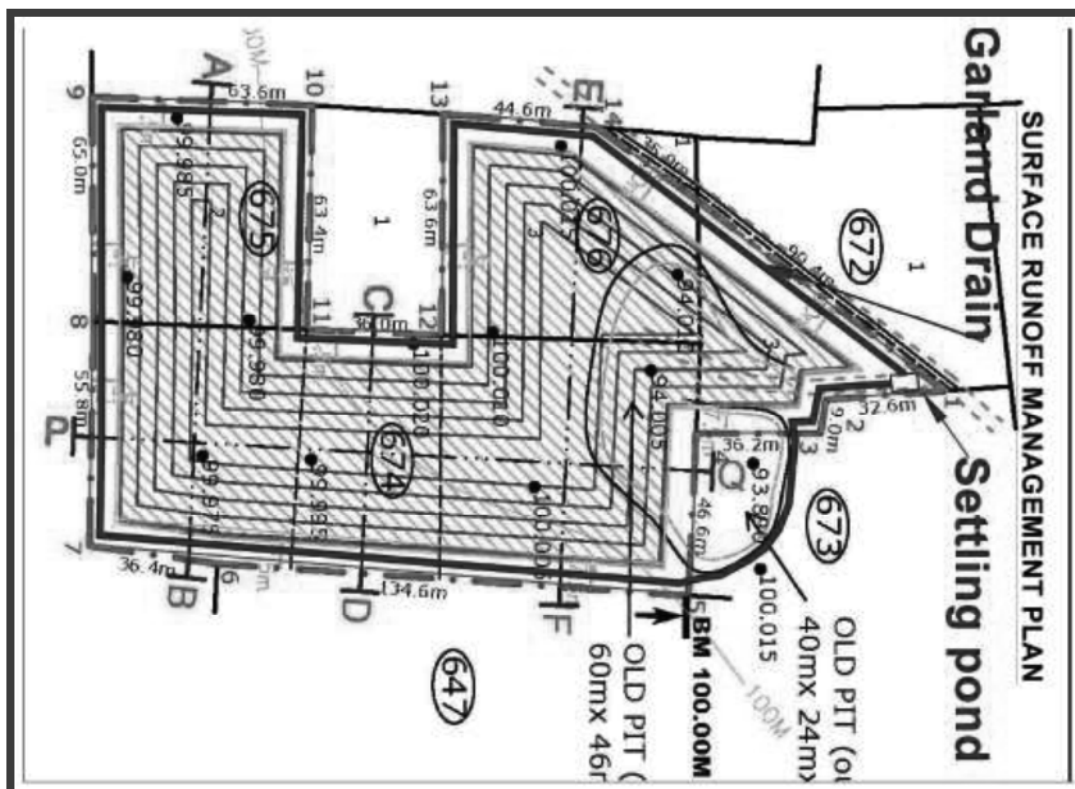
The domestic sewage to be generated from the project will be collected in septic tank with soak pits.

#### B. Washouts from overburden, ore stockpile, etc.

Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps.

The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, a garland drain of length 800m will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in **Figure No 4.4.**

**Figure 4.4: Surface Runoff Management Structures**



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**C. Disturbance to drainage courses**

There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations

**D. Generation of mine pit water pumped out from deeper workings if any.**

The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering. In the nearby region, the formations are compact with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 20m. The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation. As mentioned earlier, the rainfall will be collected in the mine floor sump and advantageously used. Excess water if any in the sump will be pumped to settling pond for downstream users.

**4.3.3.1 STAGE OF GROUNDWATER DEVELOPMENT**

Details of hydrological scenario of the study area were given in para 3.6, Chapter – III. The groundwater resource data of Virudhunagar district was obtained from the data provided in the technical report of the Central Ground Water Board, South Eastern Coastal Region – ‘District groundwater brochure, Virudhunagar District.’

**Table 4.8: Ground Water Resources Estimation– Vembakottai Taluk (M.Cum)**

Net Groundwater Availability	Existing Gross Draft for Irrigation	Existing Gross Draft for Domestic and industrial water supply	Existing Gross Draft for all uses	Allocation for Domestic and Industrial Requirement supply upto next 25 years (2029)	Allocation for Domestic and Industrial Requirement supply upto next 25 years (2029)	Stage of Ground water Development (%)	Category of Block
26.82	13.14	23.7	15.51	24.7	11.22	58	Safe





From the table it is seen that the stage of groundwater development of Vembakottai where the study area falls is 58%. In view of this, this area can be categorized as 'Safe' from ground water development point of view. Thus there is scope for further ground water development.

#### **4.3.4 REDUCING WATER CONSUMPTION OVER THE YEARS:**

##### **4.3.4.1 GENERAL METHODS:**

Use of water will be monitored and used to the minimum required. Awareness will be spread to the employees about the importance of water conservation. Tap and showers will be turned off immediately after use and any leaks will be monitored and immediately controlled. Water requirement for greenbelt and dust suppression can be reduced by choosing the native plants/trees species with low water requirement and which can sustain in such conditions for greenbelt/ plantation and also optimum usage to the required minimum. While the dust suppression itself is an important method of pollution control for air pollution due to dust, the water consumption will be monitored strictly. The water tanker will be examined for any sources of leaks and if found will be immediately sealed so that water can be utilized for dust suppression effectively without loss.

##### **4.3.4.2 RAINWATER HARVESTING PLAN**

Since the lease proximate areas are with less water potential and the rainwater is the major source for replenishment of ground water, effective rainwater harvesting and other water augmentation measures are proposed in this project.

- a) Development of garland drain around the quarry connected to settling tank.
- b) Cleaning of drain periodically to prevent siltation
- c) The supernatant clear water from the settling pond will drain into the nearby drainage on the western side of the lease.
- d) Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.
- e) Excess water, if any in consultation with local villagers and in line with government practices shall be provided to the downstream users.

**4.4 NOISE AND VIBRATION:**

**4.4.1 NOISE ENVIRONMENT:**

The ambient noise levels in the study area have been discussed in Chapter - III. The data shows that the existing noise levels are within statutory tolerable limits. The impact prediction and control measure for noise environment due to mining and allied activities is described below:

**4.4.1.1 IMPACT PREDICTION DUE TO NOISE:**

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Besides, other operations such as drilling, blasting, movement of vehicles, etc., also produce noise of considerable magnitude in mining operations. The main sources of noise and expected levels are given below in **Table no – 4.9.**

**Table 4.9: Main Sources of Noise**

Sl. No.	Source	Inside Cabin	Noise level at dB(A) 10 m. from source
1	Shovel	84-91	59-68
2.	Dumpers/Tippers	87-96	75-85
3.	Drill	88- 95	75-83

Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents. The impact of noise level as per World Health Organization’s 1986 notification is given below in **Table No - 4.10.**

**Table 4.10: Impact of Noise Levels**

NOISE LEVELS	ADVERSE EFFECTS
90-115 dB	Partial deafness and nervous irritability
> 115 dB	Permanent deafness
Impulsive noise (>90dB)	Frightens livestock grazing in the nearby areas



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OSHA (Occupational Safety and Health Administration), USA and other similar organisations stipulate that noise level up to 90 dB(A) is acceptable for eight hours exposure Leq (Equivalent sound level) (8hrs) per day. The Directorate General of Mines Safety, in circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less.

The noise will be felt only near the active sources. There will be considerable reduction in the noise level due to the absorption factor, environmental surroundings and other attenuation factors. As far as absorption factor is concerned, If the ground cover is vegetated or has a soft texture, sound will decrease at the rate of 4.5 dB(A) every time the distance between the source and the observer is doubled. Besides, there will be shielding factor, which takes into account the environmental surroundings. With every 30m of dense land scape vegetation, 5 dB(A) of additional attenuation can be obtained up to a maximum of 10 dB(A). As such at away places the effect of noise will not be felt.

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary.

Noise modeling is carried out using the following formula:

$Lp2 = Lp1 - 20 \log R2/R1$ , Where,  $Lp1$  and  $Lp2$  are sound pressure levels at points located at distances  $R1$  and  $R2$  respectively from the source. The study results are as follows:

**Table 4.11: Post Project Noise Levels**

Sl.No	Location	Baseline Day Eq.in dB(A)	Post project noise Eq in dB(A)	Limit dB(A) as per MoEF&CC
1.	North West Corner	45.5	59.9	90
2.	North East Corner	45.5	58.7	90
3	South East Corner	45.5	58.8	90
4	South West Corner	45.5	56.6	90
5	Edirkottai Village	47.0	47.1	55
6	Ettakkapatti Village	45.7	46.0	55
7	Kundayiruppu Village	47.8	47.9	55
8	Kangerseval Village	46.9	47.1	55

From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor.



However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding villages.

#### **4.4.1.2 CONTROL MEASURES FOR NOISE ENVIRONMENT:**

Hence, by following mitigative measures for noise control, the impact on noise levels will be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centers to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of tin net on the southern side and green net along the lease periphery on the other sides.

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

#### **4.4.2 GROUND VIBRATIONAL DUE TO BLASTING EFFECTS:**

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Flyrock is another possible damage causing outcome of blasting. There are many factors, which influence these, like long explosive column with little stemming column, improper burden, loose material or pebbles near holes and long water columns in the holes.



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The following control measures will be planned to reduce ground vibratory conditions to sustainable statutory limits:

- 1) Carrying out controlled blasting using Nonel delay detonator.
- 2) Optimum design for burden and spacing.
- 3) Reducing explosive charge per delay to minimum.
- 4) The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- 5) To contain fly rocks, stemming column to be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- 6) Blasting will not be carried out when strong winds are. Blasting will be done during midday time.
- 7) Controlled blasting to avoid tension cracks which may endanger the stability of bench slopes in the mine.
- 8) Proper care and supervision during blasting by a competent and experienced person to be carried out.

By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29-08-1997 as given below

**Table 4.12: Permissible Peak Particle Velocity (PPV) In Mining Areas**

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
In mm/sec			
<b>A. Buildings/structures not belonging to owner</b>			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
<b>B. Building belonging to owner with limited span of life</b>			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50



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Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance. Since a cart track is passing near the lease area, though no vehicle movement is observed in this road, It is also suggested to carry out the following precautionary measures before blasting:

- 1) Post security guard / flagmen at least 300m from the mines on either side of the road.
- 2) Blasting flags (red flags) shall be displayed before blasting in the blasting zone before blasting.
- 3) Block movement of men or vehicle and ensure the entire stretch free from movement of men or animals.
- 4) To give a warning signal by way of long hooter / siren/whistle 5 minutes prior to blast.
- 5) To provide “BLAST SIGNAL” 1 minute before blast and also “ALL CLEAR SIGNAL” after inspection of the blasting site and ensuring proper blast by the blaster.
- 6) Restoring the movement only after getting “ALL CLEAR SIGNAL”
- 7) Carrying out blasting through DGMS qualified Blaster and following all the prescribed statutory rules for transportation, storage & handling of explosives .

#### **4.5 LAND ENVIRONMENT:**

This lease area in S.F.Nos. 672/3, 674, 675/2, 676/3 is a patta land in the name of the applicant. The present land use pattern, and the post mining land use pattern is shown below:

**Table 4.13: Land Use Table**

<b>S.No</b>	<b>Land Use</b>	<b>Present Area (Ha)</b>	<b>Area in use – End of 5 years period (Ha)</b>
1	Mining \Excavation	0.276	1.800
2	Infrastructure & Road	Nil	0.050
3	Greenbelt and Plantation	Nil	0.360
4	Undisturbed	2.004	Nil
5	Fencing	Nil	0.070
	<b>Total</b>	<b>2.280</b>	<b>2.280</b>

#### **4.5.1 LAND RECLAMATION:**

There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Mining will be



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carried out up to 20m depth for 5 years. Ultimately the entire mined out area of 1.800 Ha will be left as water body. 0.050 Ha will be the mine roads & infrastructure, 0.360 Ha will be covered with vegetation, and 0.070 will be fencing.

**Table 4.14: Land Use During Post Operational Period**

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	1.800	-	1.800
2	Infrastructure and Roads	0.050	-	-	0.050
3	Green Belt	0.360	-	-	0.360
4	Undisturbed	-	-	-	-
5	Fencing	-	-	0.070	0.070
	<b>TOTAL</b>	<b>0.410</b>	<b>1.800</b>	<b>0.070</b>	<b>2.280</b>

Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized to meet the water requirement of the project.

**4.6 BIOLOGICAL ENVIRONMENT:**

**4.6.1 EXISTING FLORA AND FAUNA:**

The core zone area is a hard rock formation area, with barren patches. Details of flora/fauna pattern in core and buffer zones have been described in chapter - III.

**4.6.2 IMPACT OF MINING ON BIOLOGICAL ENVIRONMENT:**

The significance of impact on biological environment due to mining and allied activities on various fronts is described below:

**Table 4.15: Impact on Biological Environment**

S.No	ISSUES	OBSERVATIONS
1	Clearance of vegetation due to mining and allied activities	No clearance of major vegetation is involved. Besides, part of the lease area was already mined out during earlier mining operations.
2	Retardation of tree growth, tip burning, etc, due to deposition of dust and the Particulate matter generated from the mining operation.	Necessary mitigative measures like dust suppression, proper maintenance of equipment's, roads will be carried out to prevent dust generation.
3	Proximity to national park/ wildlife sanctuary/reserve forest/mangroves/Coastline/estuary/	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks,



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	sea	biospheres, sanctuaries, etc.
4	Release of effluents into water body that also supplies water to wildlife	There is no proposal to discharge any effluent into nearby water bodies.
5	Proposed project could increase siltation that would affect nearby biodiversity area	Surface runoff management structures like garland drain, settling pond etc. as explained above will be constructed and as such there will not be any appreciable impact on surface water quality which in turn can affect the bio diversity of the area.
6	Activities of the project affects the breeding/nesting sites of birds and animals	In the present ML area, there is no wetland. A migratory bird needs sufficient wetlands with sufficient food, shelter, roosting places and nesting places which is not possible here.
7	Located near an area populated by rare or endangered species	There are no Schedule 1 animals
8	Risk of fall/slip or cause death to wild animals due to project activities	In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent falling of animals in the mine pits.
9	Project affects the forest-based livelihood/any specific forest product on which local livelihood depends	Not applicable
10	Project likely to affect migration routes	No migration routes are in the area.
11	Project likely to affect flora of an area, which have medicinal value	No such significantly important medicinal value species within the ML area and its nearby region.
12	The project likely to affect wetlands, fish breeding grounds, marine ecology	There are no any wetlands, fish breeding grounds, marine ecology nearby the ML area which will be affected due to this project.
13	Project affects the Agriculture, Forestry and Traditional Practices	Due to poor soil condition and non-availability of perineal water source, no major agricultural activity is carried out in and around the lease area. Only patches of plantation are observed in few places in the monsoon season based on water availability.
14	Impact on soil health and biodiversity	The lease area is covered with grasses and bushes only (Photograph of the site attached in Chapter-II). Besides, there is no waste generation, disposal or stacking involved in this project. As such no loss of soil health and Bio-diversity is expected.
15	Climate change leading to droughts, floods, etc.	•As such the production from this lease is very low to cause any appreciable impact.
16	Pollution leading to release of greenhouse gases (GHG) rise in temperature (Hydrothermal/Geothermal effect due to destruction in environment, Bio-geochemical processes and its foot prints including environmental	<ul style="list-style-type: none"> <li>•No adverse impact on the surrounding environment is envisaged since the number of equipments to be used to achieve this small production is very less and the magnitude of operation is of very small level.</li> <li>•Besides, as is it a mining project, no adverse generation of heat is envisaged.</li> <li>•Certified vehicles with low carbon emissions will only be</li> </ul>





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	<p>stress) and livelihood of local people.</p>	<p>used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1150 number of plants will be planted in and around the lease area.</p> <ul style="list-style-type: none"> <li>•Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed.</li> <li>•There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.</li> <li>•It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of varioius mitigative measures.</li> <li>•These mitigative measures will be continued for the entire lease period ensuring no impact on the environment.</li> <li>•As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people ,loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.</li> </ul>
<p align="center">17</p>	<p>Possibilities of water contamination and impact on aquatic ecosystem health and impact on Sediment geochemistry in the surface streams</p>	<ul style="list-style-type: none"> <li>•This being a mining project no process effluent will be generated.</li> <li>•Water generation is expected to be due to             <ul style="list-style-type: none"> <li>✓ Direct rainfall falling within the pit</li> <li>✓ Rain water draining near the lease area.</li> </ul> </li> <li>•Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users.</li> <li>•Rainwater from the mine periphery will be collected through peripheral garland drain. Garland drain will be connected to a settling pond. Supernatant clear water from settling pond confirming to applicable limits will be let out to downstream users for agricultural or other purposes.</li> <li>•Due to above mentioned reasons and absence of perinial water bodies nearby where in any marine ecosystem is observed, no effect on this front is expected.</li> </ul>

There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. Therefore there shall be no impacts due to mining activity on them. Even though there are no adverse impact on bio diversity and flora/fauna status due to project operations, positive



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impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with elaborately planned green belt development activities.

**4.6.3 CONTROL MEASURES FOR BIOLOGICAL ASPECTS:**

To reduce the adverse effects on flora/fauna status of the area due to deposition of dust generated from mining operations, mobile water tanker systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out depending upon the immediate need, priority and availability of land. The plantation will be done along the lease boundary in a phased manner.

**4.6.4 GREEN BELT & PLANTATION:**

In the lease area, safety barrier 7.5m around the periphery and 10m safety zone for cart track is left. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. About 1150 trees will be planted in and around the lease area.

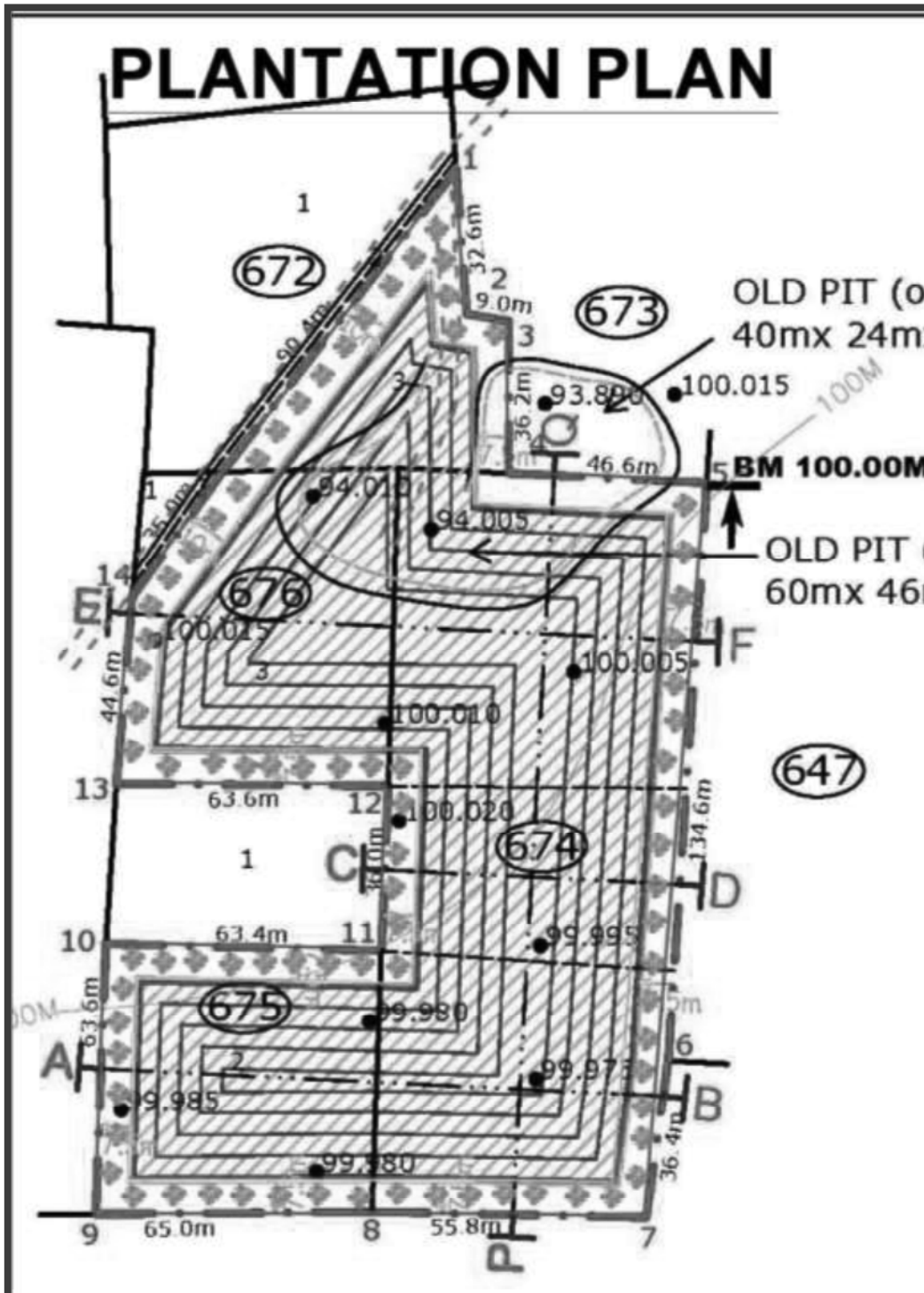
**Table 4.16: Proposed Plantation**

Year	No. of trees proposed to be planted	Name of the species
I	230	Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc.,
II	230	
III	230	
IV	230	
V	230	
<b>Total</b>	<b>1150</b>	

Ultimately the entire mined out area of 1.800 Ha will be left as water body. 0.050 Ha will be the mine roads & infrastructure, 0.360 Ha will be covered with vegetation, and 0.070 will be fencing. The post mining land use plan showing afforestation and water body is shown in **Figure No- 4.7**.



**Figure 4.5: Mine Closure Plan**



#### **4.7 SOCIO ECONOMIC ENVIRONMENT:**

The entire lease area is in the proponent's possession. Hence, there are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here. The cart track in proximity to the lease area not be disturbed by the proponent and sufficient safety barrier and protective measures has also been considered.

The mining operations in the proposed mine will employ about 18 persons directly and about 50 persons on indirect basis through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service related activities connected with the project operations as shown under.

- Project related logistical operations for transport of Rough Stone, etc,
- Various trading services for consumer goods, spare parts, sundry items, etc.
- Contractual services connected with the project.
- Green belt and horticultural works in the project.
- Casual labor needs for various activities.

Besides, there will be improvement in the following aspects due to project operation:

- ❖ Improvement in infrastructural facilities, providing education aids etc. in nearby schools
- ❖ Betterment of drinking water facilities.
- ❖ Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc from this project directly and also indirectly.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area.

**Table 4.17: CER Cost**

<b>Project Cost (Rs.)</b>	Rs. 77,28,230 /-
<b>CER Cost Requirement (2% of the Project Cost) (Rs.)</b>	Rs. 1,54,564/-
<b>Revised CER cost allocated (Rs.)</b>	Rs. 5,00,000/-



However, towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in provision of facilities in nearby Government School.

#### **4.8 OCCUPATIONAL HEALTH AND SAFETY:**

##### **4.8.1 BASELINE STATUS:**

Primary data collection through field survey conducted in the study area reveals that there is no reported incident of any occupational diseases in the area. Hazardous jobs like blasting, loading, etc. are planned to be executed safely and with all precautionary measures as prescribed in Metalliferrous Mines Regulations of 1961, so as to minimize hazards and incidences of health problems.

##### **4.8.2 IMPACTS ON OCCUPATIONAL HEALTH DUE TO PROJECT OPERATIONS:**

Anticipated occupational illness sequel to mining activities can be as follows:

- Dust related pneumonia
- Tuberculosis
- Rheumatic arthritis
- Segmental vibration
- Miner's Nystagamus

##### **4.8.3 MITIGATIVE MEASURES FOR OCCUPATIONAL HEALTH:**

To reduce pollution emanation from the project, following measures are being and will be taken:

- Water sprinkling on haul roads etc.
- Green belt creation to arrest dust and reduce noise propagation.
- Acceptance of good control measures for reducing air pollution, as mentioned earlier in the chapter.
- Control of noise levels through good preventive maintenance of machineries, green belt creation, provision of ear plug to workers, etc.
- In addition to above measures, the following remedial steps are being and will be enforced to ensure minimization of occupational health and safety problems.



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- Medical examination of workers by qualified doctors, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

#### **4.8.4 MITIGATIVE MEASURES FOR SAFETY ASPECTS:**

The following safety gadgets will be provided to the staff and workers based on their area of operation and work & requirement:

<b>SI No</b>	<b>Safety Equipments</b>
1.	Helmets
2.	Shoes
3.	Goggles
4.	Dust Mask
5.	Hand Gloves
6.	Reflective Jackets
7.	Ear Muffs
8.	Signal Lights/Flags

#### **4.9 LOGISTICAL SYSTEM:**

From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The expected peak transport will be as follows:

**Table 4.18: Details of Transportation**

<b>Sl.no</b>	<b>Particulars of activity</b>	<b>Quantity</b>
A	Maximum Material Transported (m <sup>3</sup> /year) - Say	66780
B	No of days in a year	300
C	Transport hours per day	8
D	Truck capacity in T	20
	Trips per hour	3 Trips/hr

From the above table it is seen that there will be about 3 trips per hour. The existing road can easily absorb this traffic due to this project. However, the following mitigative measures are suggested:

- ❖ Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.



- ❖ Plantation on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ Keeping traffic regulators at vulnerable locations.
- ❖ Distribution of transport vehicles for avoiding choking of roads
- ❖ Limiting of speed
- ❖ Installation of barriers at vulnerable locations
- ❖ Provision of tyre washing facility at the mine outlet

#### **4.10 WASTE MANAGEMENT:**

**Solid Waste:** Since the entire mined out material will be used there will not be any solid waste generation from this project.

**Liquid waste:** There is no process effluent generation from this mine. Hence no liquid waste is generated.

**Hazardous waste management:** In this project the following management practices will be followed:

- Ensuring availability of different colour bins for collection of different types of waste.
- Storing of Hazardous waste material in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc.
- Ensure that there are no leakages/spillages of hazardous wastes.
- Ensuring that the fire extinguisher system is available at hazardous material storage area.

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The hazardous waste if any will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

**Plastic waste:** Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

\* \* \* \* \*





## **CHAPTER 5**

### **ANALYSIS OF ALTERNATIVES**

#### **5.1 ALTERNATE TECHNOLOGY:**

This is a proposed Rough Stone and Gravel Quarry in which Mechanized Open Cast mining will be carried out. It involves jack hammer drilling, blasting, excavation, loading and transportation of Rough stone to the crushing units. As this method is techno economically proven, consideration of an alternate technology is not warranted.

#### **5.2 ALTERNATE SITE:**

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise.

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## **CHAPTER 6**

### **ENVIRONMENTAL MONITORING PROGRAMME**

#### **6.1 GENERAL**

In this project, appropriate environmental monitoring programme are framed. Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area.

The monitoring schedules are planned to aim at regular and systematic study of various pollution levels with respect to air and water quality, noise levels etc., to ensure that they conform to the standards laid down by the Environment Protection Act, 1986 and various Central and State Pollution Control Board Limits.

The various methodologies and frequency of studies of all environmental quality parameters will be as per prescribed norms laid down by MOEF&CC and State Pollution Control Board. This being a small quarry operation, the Mines in-charge will take care of all the environmental related works also.

Environmental control measures include components like air, water and soil quality, noise levels, afforestation measures, etc. For monitoring of environment over the life of the mine, a set of stations for study of quality parameters are fixed as per the actual requirements and prevailing conditions of environmental factors, as dictated from time to time, depending on the prevailing pollution levels.

#### **6.2 MONITORING SCHEDULES FOR VARIOUS PARAMETERS**

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits. However, based on the need and priority it may be suitably modified / improved in consultation with local authorities. The monitoring schedules to be adopted in this quarry are given below.



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**Table 6.1: Environmental Monitoring Schedule**

S.No	Environmental Parameters	Parameters to be monitored	Monitoring area coverage /locations	Frequency of monitoring
1	Air Quality	Sulphur dioxide (SO <sub>2</sub> ), Oxides of Nitrogen (NO <sub>2</sub> ), Respirable Particulate Matter (PM <sub>2.5</sub> and PM <sub>10</sub> ).	2 locations in the buffer zone and 1 work zone locations.	Once in a year in each location.
2	Water Quality	General, Physical, and chemical parameters	Ground Water samples (around the project area) and Mine Pit water samples	Once in a year
3	Water Table Fluctuations	Water Levels	Nearby wells and Borewells	On yearly basis pre and post monsoon level
4	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A)	Work zone locations and buffer zone villages	Once in a year
5	Vibration	Peak Particle Velocity	Mine periphery	Once to arrive at optimum blasting parameters
6	Socio Economic Environment	Socio Economic Survey, Review of implementation of CER activities proposed	Buffer Zone	Yearly basis
7	Occupational Health	Occupational health survey to detect early incidence of diseases, Audiometry Test for workers in noise prone area and review of safety matters.	Staff and Workers involved in the project	Once in a year
8	Greenbelt	Maintenance	Within the lease area	Regularly

**6.3 LEGISLATIVE AND REGULATORY FRAME WORK:**

The project will have environmental policy declaring its responsibility and commitment to protect the environment and to ensure public safety. The existing policy will be available with all concerned officials of the plant. The following environmental standards as per methodologies prescribed, by MOEF/CPCB/TNPCB will be enforced in this project:



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**Table 6.2: Environmental Standards**

Standards	Issued By	Reference
National Ambient Air Quality Standards	Central Pollution Control Board	Table No. 6.3
Water quality standards per IS 10500:2012	Bureau of Indian Standards	Table No.6.4
Noise Standards	CPCB / MoEF&CC	Table No.6.5
Permissible Peak Particle Velocity	DGMS, Dhanbad	Table No.6.6

**Table 6.3: National Ambient Air Quality Standards**

[ 1987 ] - 1987 4

NATIONAL AMBIENT AIR QUALITY STANDARDS  
CENTRAL POLLUTION CONTROL BOARD  
NOTIFICATION  
New Delhi, the 18th November, 2009

No. B-28014/2009/PC-I—In exercise of the powers conferred by Sub-section (2) (b) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

**NATIONAL AMBIENT AIR QUALITY STANDARDS**

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	50 80	20 80	- Improved West and Gaek - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM <sub>10</sub> , µg/m <sup>3</sup>	Annual* 24 hours**	50 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM <sub>2.5</sub> , µg/m <sup>3</sup>	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O <sub>3</sub> ), µg/m <sup>3</sup>	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb), µg/m <sup>3</sup>	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO), mg/m <sup>3</sup>	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Amonia (NH <sub>3</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method



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4 THE GAZETTE OF INDIA : EXTRAORDINARY [PART III—Sec. 4]

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m <sup>3</sup>	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m <sup>3</sup>	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m <sup>3</sup>	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman  
[ADVT-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998.



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**Table 6.4: IS – 10500 :2012 Standards**

**Table 1 Organoleptic and Physical Parameters**  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table No – 6.2 contd.

Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, <i>Max</i>	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, <i>Max</i>	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, <i>Max</i>	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, <i>Max</i>	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, <i>Max</i>	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, <i>Max</i>	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl <sub>2</sub> ), mg/l, <i>Max</i>	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, <i>Max</i>	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, <i>Max</i>	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, <i>Max</i>	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, <i>Min</i>	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, <i>Max</i>	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, <i>Max</i>	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, <i>Max</i>	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, <i>Max</i>	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO <sub>3</sub> ), mg/l, <i>Max</i>	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, <i>Max</i>	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, <i>Max</i>	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, <i>Max</i>	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO <sub>4</sub> ) mg/l, <i>Max</i>	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H <sub>2</sub> S), mg/l, <i>Max</i>	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, <i>Max</i>	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO <sub>3</sub> ), mg/l, <i>Max</i>	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, <i>Max</i>	5	15	IS 3025 (Part 49)	—

NOTES

1 In case of dispute, the method indicated by "\*" shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.





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**Table 6.5: Noise Level Standards**

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

**Note :**

1. Day time shall mean from 6 a.m. and 10.0 p.m.
2. Night time shall mean from 10.0 p.m. and 6 a.m.
3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be average as one of the four above mentioned categories by the competent authority.

\* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is energy mean of the noise level over a specified period.

**Table 6.6: Permissible Noise For Industrial Workers As Laid Down By CPCB**

Exposure time (in hr. per day)	Limit in dB(A)
<b>8</b>	<b>90</b>
<b>4</b>	<b>93</b>
<b>2</b>	<b>96</b>
<b>1</b>	<b>99</b>
<b>1/2</b>	<b>102</b>
<b>1/4</b>	<b>105</b>
<b>1/8</b>	<b>108</b>
<b>1/16</b>	<b>111</b>
<b>1/32</b>	<b>114</b>



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**Table 6.7: Permissible Peak Particle Velocity (PPV) In Mining Areas**

In mm/sec.

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
<b>A. Buildings/structures not belonging to owner</b>			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
<b>B. Building belonging to owner with limited span of life</b>			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

The above said monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

**6.4 ENVIRONMENTAL MONITORING COST:**

Towards environmental monitoring it is proposed to allocate a budget of Rs. 50,000 per annum for this project. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

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## **CHAPTER 7 ADDITIONAL STUDIES**

### **7.1 GENERAL:**

The additional studies covered for this EIA / EMP report are:

1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. Cumulative Impact Study
4. R&R Plan
5. Mine closure planning

### **7.2 PUBLIC CONSULTATION:**

This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.

### **7.3 RISK ASSESSMENT:**

For the various risks, likely to arise, detailed analysis of causes and control measures is given in below:

<b>S.No</b>	<b>Factors</b>	<b>Causes of risks</b>	<b>Control measures</b>
1.	Removal of material	a) Bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the benches.	Overall bench slope angle will be maintained optimally as per DGMS requirement. Working bench width will be more than bench height.
2.	Drilling	a) Due to high pressure of compressed air hoses may burst. b) Down the hole drill rod	• Periodical preventative maintenance and replacement of worn out accessories in the compressor and drill equipment.



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S.No	Factors	Causes of risks	Control measures
		may break due to improper maintenance of rod.	<ul style="list-style-type: none"> <li>As per manufacturers recommendation rod to be replaced and bits will be changed.</li> </ul>
3.	Blasting	a) Fly rock, ground vibration, noise etc. b) Improper charging of explosives	<ul style="list-style-type: none"> <li>Burden and spacing will be kept optimum on trial basis.</li> <li>Explosive charge per delay will be minimized.</li> <li>Controlled blasting with Nonel will be used.</li> </ul>
4.	Excavation	a) Hauling and loading equipment are in such proximity while excavation b) Swinging of bucket over the body of tipper c) Driving of unauthorized person	<ul style="list-style-type: none"> <li>Operator shall not operate the machine when person &amp; vehicles are in such proximity.</li> <li>Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground.</li> <li>Shall not allow any unauthorized person to operate the machine by effective supervision.</li> </ul>
5.	Transportation	a) Operating the vehicle "nose to tail" b) Overloading of material c) While reversal & overtaking of vehicle d) Operator of truck leaving his cabin when it is loaded	<ul style="list-style-type: none"> <li>It will be ensured that all these causes will be nullified by giving training to the operators.</li> <li>No over loading will be done.</li> <li>Audio visual reverse horn will be provided.</li> <li>Proper training will be given.</li> </ul>
6.	Fire due to electricity and Oil	a) Due to the short circuit of cables & other electrical parts b) Due to the leakage of inflammable liquid like diesel, oil etc.	<ul style="list-style-type: none"> <li>Electrical parts shall be cleaned frequently with the help of dry air blower</li> <li>All fastening parts and places will be tightening. Suitable fire suppression equipment shall be provided.</li> </ul>
7.	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation.

This being a small rough stone project that too working in a safe area, no major disaster is expected.



### **7.3.1. DISASTER MANAGEMENT PLAN:**

In General, following natural/industrial hazards may occur during normal operation.

- Inundation of mine pit due to flood/excessive rains :
- Slope failure of the pit and waste dumps
- Accident due to heavy mining equipment and
- Blasting and use of Explosives

Mining operation in this lease will be carried out under the management control and direction of a qualified mine manager. The DGMS have been issuing a number of standing orders, model standing orders and circulars to be followed by the mine management in case of disaster. All these orders statutory rules and regulations will be followed. Seismically project site and study area falls in the Zone – II and is described as least active zone. There are no perennial water body near the lease area to cause any flooding. As such no disaster due to this project is envisaged.

In order to take care of above hazard / disasters the following control measures have been adopted.

- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Avoiding mining during heavy monsoon period and marching of all the HEMM to the top benches during rainy period.
- Provision of high capacity standby pumps with generator sets with sufficient quantity of diesel for emergency pumping especially during monsoon.
- All safety precautions and provisions of regulations will be strictly followed during all mining operations
- Prohibiting entry of unauthorized persons.
- Provision of Firefighting and first-aid provisions in the mines.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees for their use.



- Training and refresher courses for all the employees working in hazardous premises
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Working of mine, as per approved plans and regularly updating the mine plans
- Cleaning of mine faces regularly
- Proper storage, usage of explosives through competent persons.
- Regular maintenance and testing of all mining equipment as per manufacturers guidelines
- Suppression of dust on the haulage roads with frequent water sprinkling, etc.
- Increasing the awareness of safety and disaster through competitions, posters and annual safety weeks and environmental weeks, encouraged through suitable rewards and other similar drives.

The management and the EMC will be able to deal with the situations efficiently keeping in view of the likely sources of dangers in the mine.

#### **7.4 REHABILITATION AND RESETTLEMENT (R & R) PLAN:**

The mining activities will be carried out within the mine lease area only. The entire mine lease area is a Patta land. There is no population within the ML area. Hence, the question of R&R does not arise.

#### **7.5 MINE CLOSURE PLAN:**

In the mine closure stage all necessary measures will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of life of mine will be properly fenced all around to prevent inherent entry of public and cattle and all the statutory requirements will be fulfilled. As already explained, in the post mining stage the rainwater harvested in the mined out void shall be utilized for irrigation and domestic needs locally. The mine closure plan is provided in **Figure 4.5**.



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**7.6 CUMULATIVE IMPACT STUDY:**

As mentioned earlier, this Rough Stone and Gravel Quarry is located in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu. The details of the other quarries located within the 500m radius of the project considered for cumulative impact study now (**Annexure-3**) has been provided below:

**Table 7.1: Details of quarries within 500m radius**

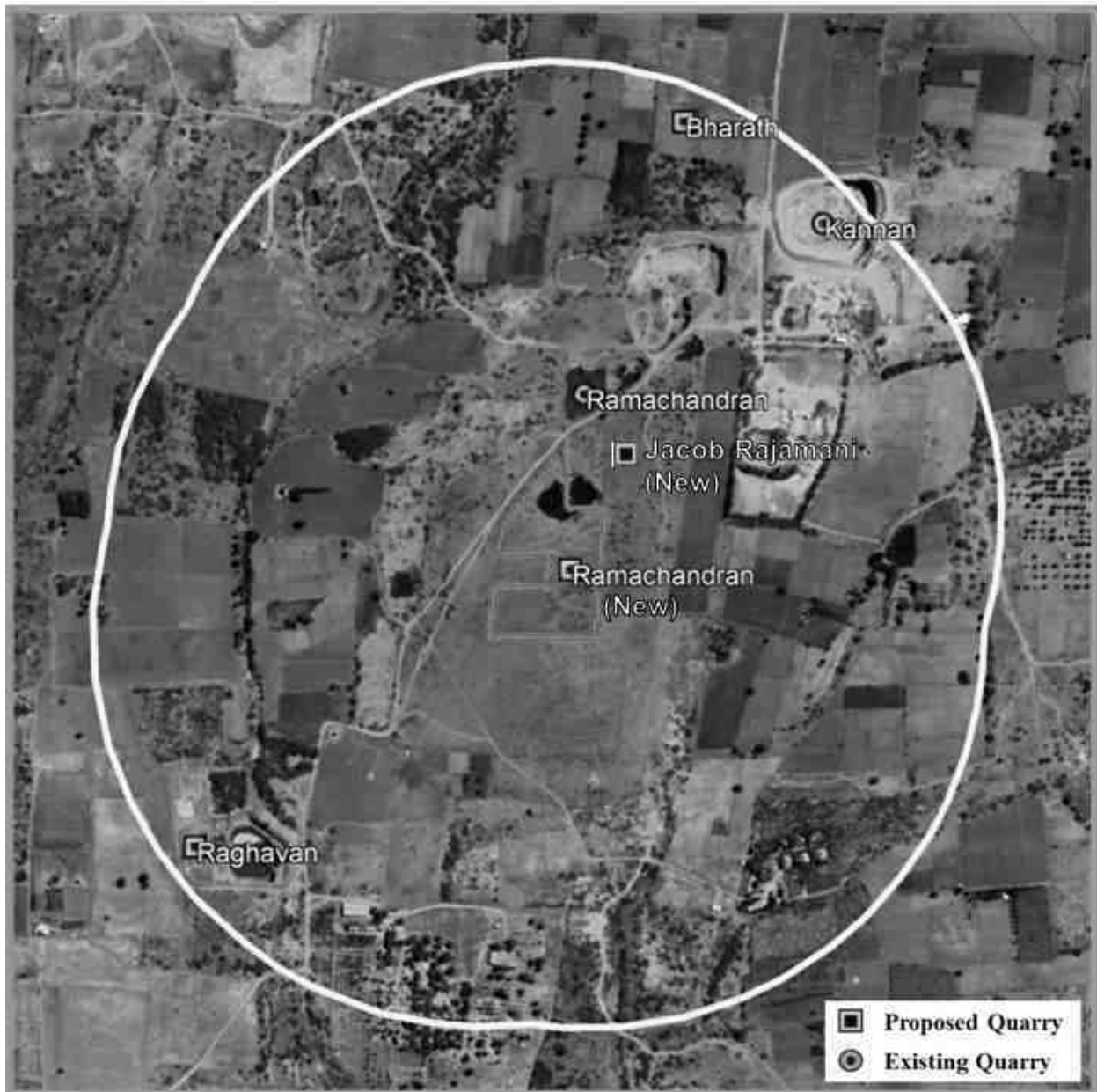
S.No	Quarry Detail	Village	S.F.No and Extent (Ha)	Proceedings No. and Lease Period
<b>I</b>	<b>Existing Quarry</b>			
1.	Thiru.S.Ramachandran	Ethirkottai	649/1 , 649/3, 668 , 670, 687/3, 688/2 <b>3.94.5</b>	KV1/373/2017 Dated: 05-05-2018 07.07.2018 to 06.07.2023
2.	Thiru. T. Kannan, S/o. R. Thirupathi Naicker.	Ethirkottai	640/2, 642/3B, 644/2B <b>1.86.0</b>	KV1/15122/2016, Dated: 06.11.2017 20.11.2017 to 19.11.2022
<b>II</b>	<b>Abandoned Quarry</b>			
		<b>-Nil-</b>		
<b>III</b>	<b>Present Proposed Quarry</b>			
1.	Thiru.Ramachandran	Ethirkottai	672/3, 674, 675/2, 676/3 <b>2.28.00</b>	KV1/664/2021 Dated: 11.02.2022
2.	Thiru.S.Kannan, S/o.Subba Naickar,	Ethirkottai	678/1, 678/3 & 679 <b>1.32.0</b>	KV1/692/2009, Dated: 12.08.2009
3.	Thiru.T.K.Barath	Ethirkottai	639/2 , 650, 651/1, 651/2 652 etc., <b>4.07.0</b>	KV1/413/2018 16.04.2018
4.	Thiru T Raghavan, S/o. Thiruppathi,	Ethirkottai	310, 311/2 <b>1.38.50</b>	KV1/382/2019 Dated: 04.07.2020
			<b>14.86.00</b>	

From that above it is seen that, although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared. A map showing the existing and proposed quarries located near the lease area is provided Figure No.7.1 given below:



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**Figure 7.1: Vicinity Map**



The baseline monitoring carried out for this project reflects the cumulative impact of these existing quarries. Considering that the lease period of the existing quarry will be coming to an end shortly, this proposed quarry will serve more as a replacement for the existing quarry to ensure meeting the present Roughstone demands. Some of the above-mentioned quarries are already commissioned and working or are already completed. For the proposed quarry of Thiru



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Jacob Rajamani and the subject project, cumulative impact study has been carried out and is provided below:

**Table 7.2: Salient details of the proposed quarries**

S.No	Project Name	Thiru S.Ramachandran	Thiru Jacob Rajamani
1	Survey No.	672/3, 674, 675/2 and 676/3	648
2	Village	Ethirkottai	Edirkottai
3	Taluk	Vembakottai	Vembakottai
4	District	Virudhunagar	Virudhunagar
5	State	Tamil Nadu	Tamil Nadu
6	Lease Area	2.28.0 Ha	1.03.5 Ha
7	Precise Area Letter No.	KV1/664/2021-kaniyamam dated:11.02.2022	NA.KA.KV.1/516/2019, kaniyamam. Dated:17.06.2019
8	Production Capacity for 5 years	Roughstone -1,97,455 m <sup>3</sup> Gravel- 46,896 m <sup>3</sup> Weathered Rock- 31,264 m <sup>3</sup>	84368m <sup>3</sup> of Rough Stone and 7387m <sup>3</sup> of Gravel
9	Method of mining	Open cast semi mechanized mining method.	Open cast semi mechanized mining method.
10	Lease Period	5 years	5 Years
11	Ultimate Depth	20m	24m
12	Project cost	Rs. 77,28,230 /-	Rs. 56,27,040/-
13	CER budget	RS.2,00,000/-	Rs. 2,50,000/-

The cumulative combined impact anticipated due to mining and allied activities in both the proposed quarries are determined for Air, Noise, Vibration, Water, Logistical, Socio Economic and Land Environment. Details of the same are provided below:

**7.6.1 AIR ENVIRONMENT:**

The mining and allied activities particularly excavation, hauling, loading and un loading etc. lead to emission of particulate matter. However, effective mitigative measures are provided in the EIA/EMP report to obviate these effects. The cumulative impact on ambient air quality for PM<sub>10</sub> and PM<sub>2.5</sub> due to the operations of both these proposed projects are predicted based on Air Quality Model simulations. The modeling is done for the peak production to know the worst scenario. The cumulative peak Ground Level Concentration (GLC) after effective implementation of various mitigative measures have been computed and given below:

**Table 7.3: Cumulative Peak Incremental Concentration**

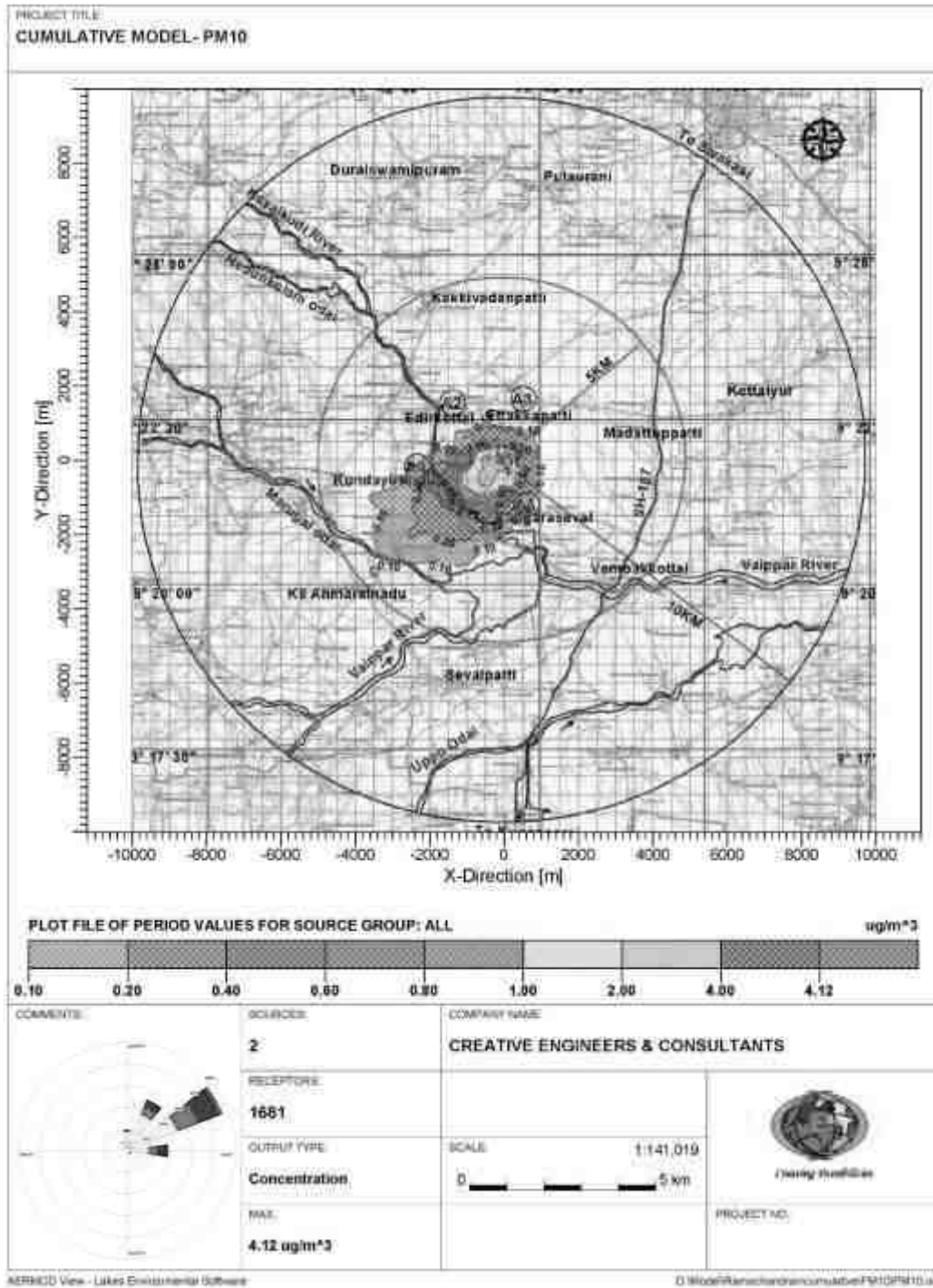
Activity	With Control Measures (µg/m <sup>3</sup> )
PM <sub>10</sub>	4.1
PM <sub>2.5</sub>	2.0



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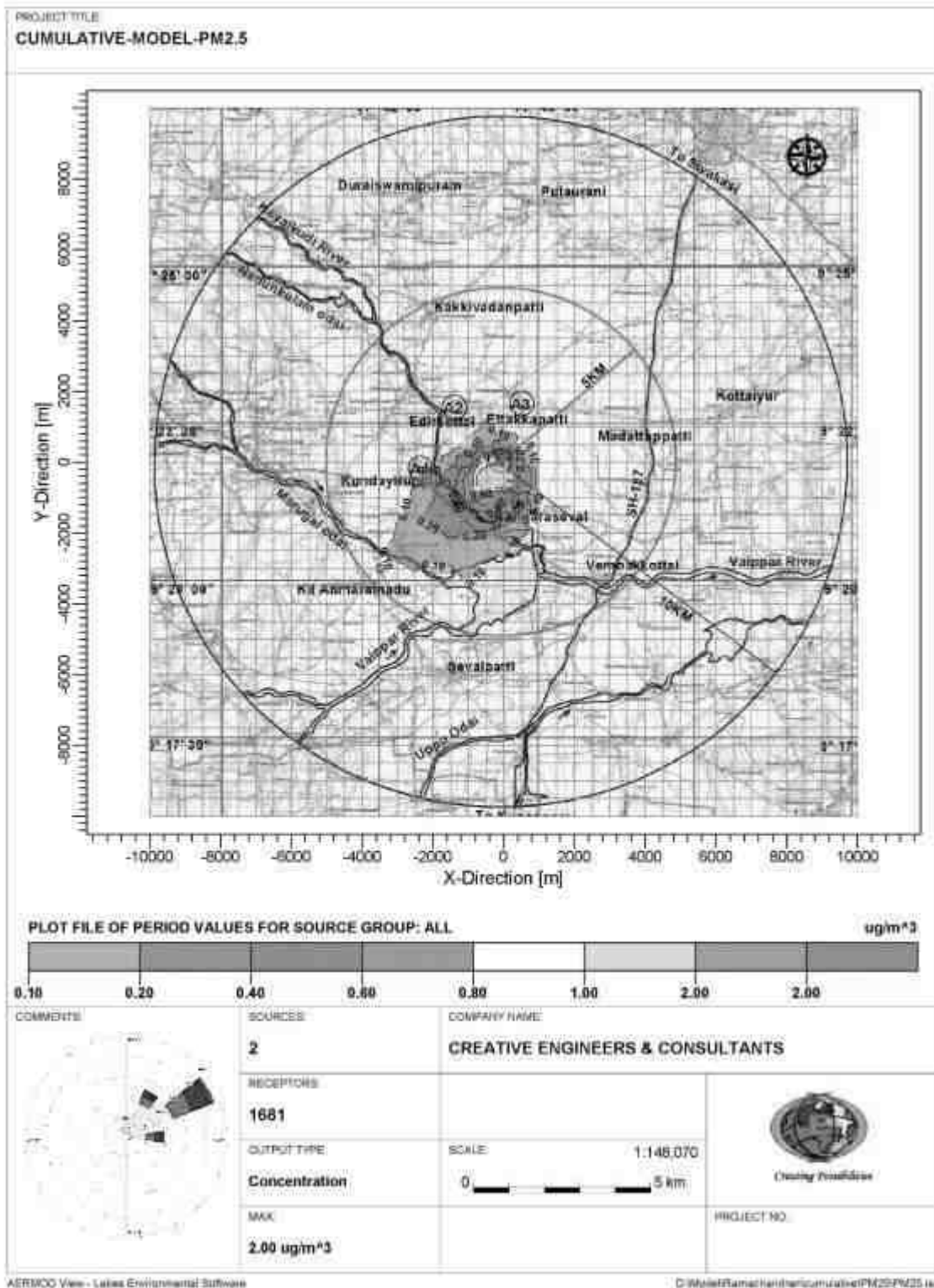
The cumulative Isoleths of PM<sub>10</sub>, PM<sub>2.5</sub> concentrations have been drawn and these are given in Figure No – 7.2 to 7.3.

**Figure 7.2: Cumulative Isoleth of GLC Prediction for PM<sub>10</sub>**



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**Figure 7.3: Cumulative Isoleth of GLC Prediction for PM<sub>2.5</sub>**



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It is observed that the peak incremental concentration for PM<sub>10</sub>, PM<sub>2.5</sub> is occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The incremental and predicted concentrations at the locations of ambient air quality have been discussed below.

**7.6.1.1 PREDICTED AMBIENT AIR QUALITY:**

The cumulative combined post project Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, (GLC) (base line + incremental) after adopting necessary control measures is given below:

**Table 7.4: Concentrations of PM<sub>10</sub> after Project Implementation**

Values in µg/m<sup>3</sup>

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1Near Mine Lease Area	68.3	4.1	72.1	-
2	A2-Edirkottai Village	60.2	<1.0	61.2	100
3	A3-Ettakkapatti Village	51.4	<1.0	52.4	60
4	A4-Kundayiruppu Village	50.6	<1.0	51.6	
5	A5-Kangerseval Village	54.4	<1.0	55.4	

**Table 7.5: Concentrations of PM<sub>2.5</sub> after Project Implementation**

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1Near Mine Lease Area	33.6	2.0	35.6	-
2	A2-Edirkottai Village	28.9	<1.0	29.9	60
3	A3-Ettakkapatti Village	24.1	<1.0	25.1	
4	A4-Kundayiruppu Village	24.0	<1.0	25.0	
5	A5-Kangerseval Village	25.8	<1.0	26.8	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario and cumulative impact of the projects show that the values of ambient air quality with respect to PM<sub>10</sub> are in the range of 51.6 µg/m<sup>3</sup> to 72.1 µg/m<sup>3</sup> and with respect to PM<sub>2.5</sub> are in the range of 25.0 µg/m<sup>3</sup> to 35.6 µg/m<sup>3</sup> which are within the statutory stipulations in respective case.

**7.6.2 WATER ENVIRONMENT:**

The water requirement for both these project is 12.5KLD comprising 10KLD for S.Ramachandran Quarry and 2.5 KLD for Thiru Jacob Rajamani Quarry. Though it may be sourced from outside agencies initially, for these projects it is planned to use the rain water



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collected in the mine sump later. Groundwater intersection is not envisaged due to both the quarrying operations. Besides, the stage of groundwater development in Vembakottai Taluk based on technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Virudhunagar District.’ is categorized as ‘Safe’ thus proving that there is further scope for groundwater development. Hence, no major impact is expected on groundwater regime due to the cumulative project operations.

### **7.6.3 NOISE ENVIRONMENT:**

Post project noise in the core zone has already been provided under para 4.4, Chapter-IV where it is seen that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Hence, the cumulative post project noise in the nearby villages has been carried out using the following formula and the results are given below:

$$Lp2 = Lp1 - 20 \log R2/R1$$

Where, Lp1 and Lp2 are sound pressure levels at points located at distances R1 and R2 respectively from the source.

**Table 7.6: Post project noise levels**

<b>S.No</b>	<b>Location</b>	<b>Baseline Day Eq.in dB(A)</b>	<b>Post project noise Eq in dB(A)</b>	<b>Limit dB(A) as per MoEF&amp;CC</b>
1	Edirkottai Village	47.0	47.5	55
2	Ettakkapatti Village	45.7	46.3	55
3	Kundayiruppu Village	47.8	48.1	55
4	Kangerseval Village	46.9	47.3	55

### **7.6.4 VIBRATION:**

By Carrying out controlled blasting using Nonel milli second delay detonator, Optimum design for burden and spacing & reducing the explosive charge per delay to minimum in both the projects no adverse impact due to blasting vibration is expected.



#### 7.6.5 TRAFFIC:

The mined out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The cumulative impact on traffic due to transportation of minerals from both these leases are provided below:

**Table 7.7: Cumulative number of trips**

Details	Thiru S.Jacob Rajamani	Thiru S.Ramachandran
Average Material Transported (m <sup>3</sup> /year)	20828	66780
No of days in a year	300	300
Transport hours per day	8	8
Truck capacity in T	20	20
Trips per hour	1 Trip/hr	3 Trips/hr

The total trips from these projects there will be hardly about 4 trips per hour. The existing road can easily absorb this negligible traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

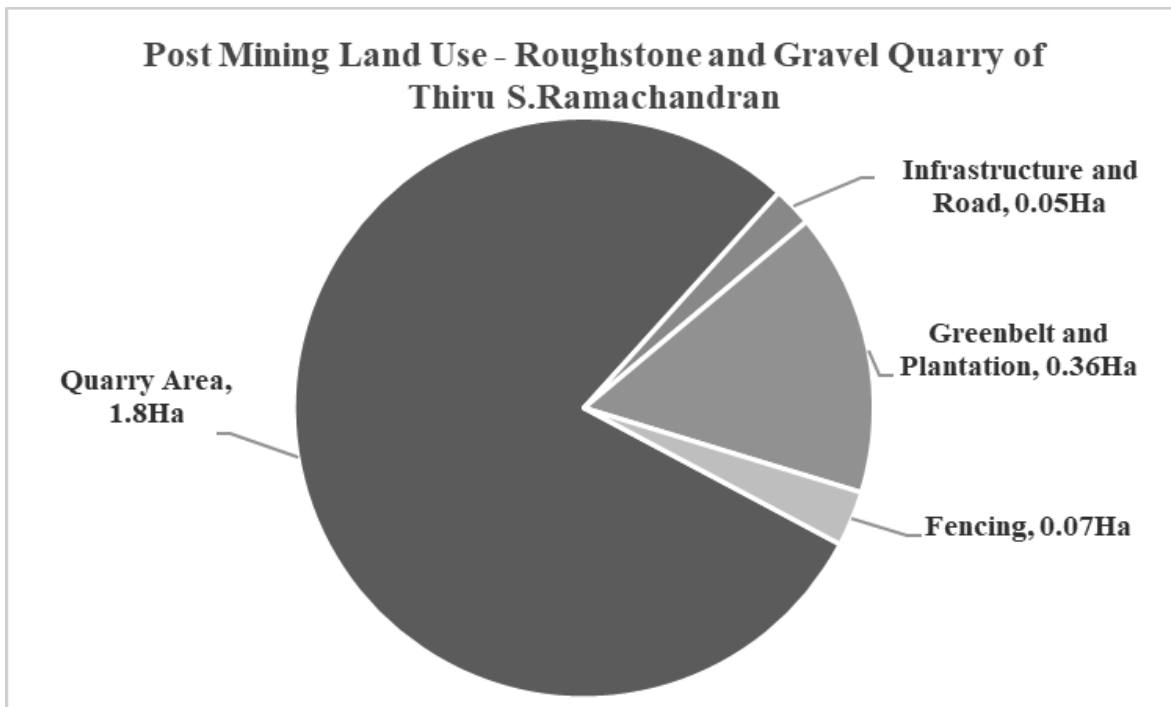
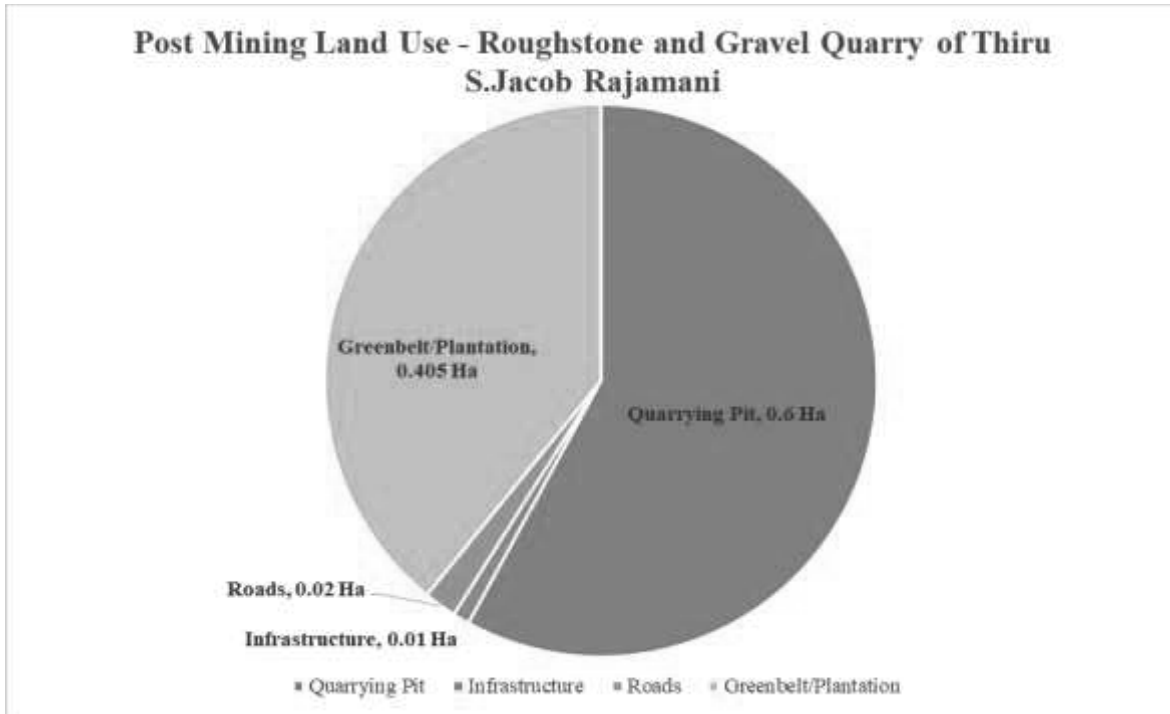
#### 7.6.6 LAND ENVIRONMENT:

**Thiru S.Jacob Rajamani's** lease area of 1.03.5 Ha is Government land. Out of 1.03.5Ha, 0.60 Ha of mined out area will be left as water body. 0.02.0 Ha will be left as road 0.405 Ha will be covered with vegetation & 0.01 will be infrastructure

**Thiru S.Ramachandran's** lease area of 2.28.0Ha is a patta land. Ultimately the entire mined out area of 1.800 Ha will be left as water body. 0.050 Ha will be the mine roads & infrastructure, 0.360 Ha will be covered with vegetation, and 0.070 will be fencing.

For both projects, in the post mining stage it will be ensured that the entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. The rainwater harvested in the mined out void shall be utilized to meet the water requirement.

**Figure 7.4: Post Mining Land Use**



## **7.7 PIT SLOPE STABILITY PLAN**

- Factors affecting slope stability of the mine are
  - Geological structure comprising dip, intervening shear zone formation, clay intrusion, joints / discontinuities, faults etc.,
  - Lithology of formation
  - slope geometry
  - Ground water availability which may cause increased thrust on the faces
- Site specific analysis
  - Proposed area is a hard rocky charnockite terrain comprising top 3m gavel, followed by 2m weathered rock and then hard rock.
  - Since the formation is of homogeneous rock type probability of slope failure is low and can be avoided if proper measures are adopted.
  - There will be a 7.5m wide barrier zone which will form a ridge which can also take care of the top section and as such no risk is envisaged on this front.
  - Small portion in the northern part of the lese area is already mined with the maximum pit depth of 6m only. Further benching as per approved mining plan will be ensured and future mining working will be carried out.
  - During future workings the following measures will be ensured:
    - Regular inspection of the mine faces to be carried out by mines manager for ensuring absence of any structural features like faults, joints, dyke, intrusive material in the rock strata which may affect the slope stability and cleared.
    - No loose material or boulders is to be stacked on the mine top or pit benches.
    - Height of the benches should be 5m. Working bench width should be at least 2.5 times the bench height. Ultimate pit bench width will be 5m & slope is kept at 45° to ensure slope stability.
    - Haul road formation will be at 1 in 16 slope with adequate road width.
    - There will be no ground water table intersection.
    - No seepage is expected due to formation. Adequate drainage management system comprising peripheral garland drain, settling pond to regulate monsoon water will be created to prevent saturation of compact layers, apparent drainage



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over the bench slope to avert damages to quarry face and manage the water flow.

The above will ensure safe and stable mine prospects.

**CONCLUSION:**

No adverse impact on the surrounding environment is envisaged from this project since the number of equipment's to be used to achieve this production is less and the magnitude of operation is of low level.

Certified vehicles with low carbon emissions will only be used. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1150 number of plants will be planted in and around the lease area.

Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures.

As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.

Mine closure plan plan is prepared for the lease period and already included in the approved mine plan.

Due to absence of perennial water bodies nearby where in any marine ecosystem is observed, no effect on this front is also expected. Hydrological investigation carried out and as given in Para 3.6 of Chapter III & para 4.3 Chapter – IV shows that the all-time ground water table in this area is much below the mining level. Hence, ground water intersection in not envisaged for



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the entire life of the mine and ground water will not be affected due to the quarrying operation. As such there will not be any adverse impact on the ground water regime. Besides, this being a mining project, there will be not be any process effluent. As mentioned earlier, the rainfall will be collected in the mine floor sump and gainfully used as per CGWA requirement. Excess water if any in the sump will be pumped to settling pond and supernatant clear water let out for downstream users.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures for the entire lease period.

\* \* \* \* \*



## **CHAPTER 8 PROJECT BENEFITS**

The proposed quarry will improve physical and social infrastructures in the area like:

- Direct employment to 18 people.
- Indirect employment to 50 people.
- Financial gains for the governments, through collection of various taxes like royalty, GST, etc.,
- Increase in General Awareness of the People.
- Continual improvements of the local amenities for the local society
- Improvement of the General Living Standard of the People in the Vicinity
- Overall Improvement in HDI (Human Development Index)
- Growth of Allied Industries in the Area.
- Improvement in Per Capita Income.
- Providing certain facilities for the local schools and panchyats

In short, the proposed Rough Stone Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, medical systems, infrastructural build-up, etc in its own way.

By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER. The activities will be implemented once the mining operations commence. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.

\* \* \* \* \*



**CHAPTER 9  
ENVIRONMENTAL COST BENEFIT ANALYSIS**

Appendix-III of the MoEF notification S.O. 1533 dated 14.09.2006, which describes the generic structure of Environmental Impact Assessment document, states that the chapter 'Environmental cost benefit analysis' is applicable if it is recommended during scoping stage.

ToR for this project has been received from SEIAA, Tamil Nadu vide their letter No. Lr No.SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022. Dated:14.07.2022. Environmental cost benefit analysis is not prescribed in the terms of reference. Hence, it is not applicable for this project.

\* \* \* \* \*



## **CHAPTER 10**

### **ENVIRONMENTAL MANAGEMENT PLAN**

#### **10.1 INTRODUCTION:**

This chapter describes the implementation strategies of the environmental management measures described through the course of this EIA/EMP report for the purpose of mitigating significant impacts due to the proposed mining operations.

#### **10.2 COMPONENTS OF THE ENVIRONMENTAL MANAGEMENT PLAN:**

The environmental management plan comprises identification of the major impacts due to project operations and their suitable mitigative measures. (Provided in an elaborate manner in Chapter-IV) Based on the environmental policy of the company, the environmental management cell will oversee the implementation of these mitigative measures. The details of the proponent's environmental policy, environmental management cell and also the budgetary allocation towards various environmental management measures has been elaborated in this chapter.

##### **10.2.1 ENVIRONMENTAL POLICY:**

The proponent will frame a well-planned environmental policy. The salient features of this policy will be.

- ❖ Ensuring risk-free and safe mining operations by following all rules and conditions prescribed in the Indian mines Act, metalliferous mining regulation, mineral conservation and development rules, etc,
- ❖ Ensuring environmental preservation by adoption of remedial measures for control of air, water quality, noise status, biological improvements, green belt creation, etc,.
- ❖ Extending CER activities to cater to the needs of local community for various benefits like improvement of physical and social infrastructures for the welfare of local community.



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- ❖ Ensuring that all mining operations such as deployment of HEMM, conduct of drilling and blasting operations, etc are strictly conducted keeping with regulatory standards & maintaining safe working environment in the area.
- ❖ Providing periodical training on safety, Health, & Environment to all employers.
- ❖ Any infringement / violation of any rule or unsafe mining operations should be reported mines manager, should be reported by the foremen/ blaster mate etc, who will take immediate corrective measures for avoiding major disasters. The report will ultimately reach the owner through upwardly hierarchical communicative channels from the lowest level to superior levels in a quick time bound duration.
- ❖ The mines manager will exercise overall control over entire mining and connected operations and all infringements / violations on any count pertaining to unsafe operations, environmental degradation, etc, should be brought to the notice of the owner of the quarry. Remedial measures for such violations and deviations should be taken care by the mines manager to avoid any hazards or disasters in the mine and nearby areas. The persons responsible for such violations will be punished through appropriate disciplinarily penal actions.
- ❖ The EC conditions and stipulations will be strictly observed by Mines manager of the mine in various issues like prescribed environmental monitoring schedules conducting of vibratory studies due to blasting, creation of green belt, management of mined area, occupational health review, etc.
- ❖ Penalty actions will be taken by the proponent in cases of continuous negligence resulting in violations deviations in this respect.
- ❖ A time schedule of once in 90 days for review of all operational factors as mentioned above is to be enforced, for proper and quick corrective actions needed in the matter.

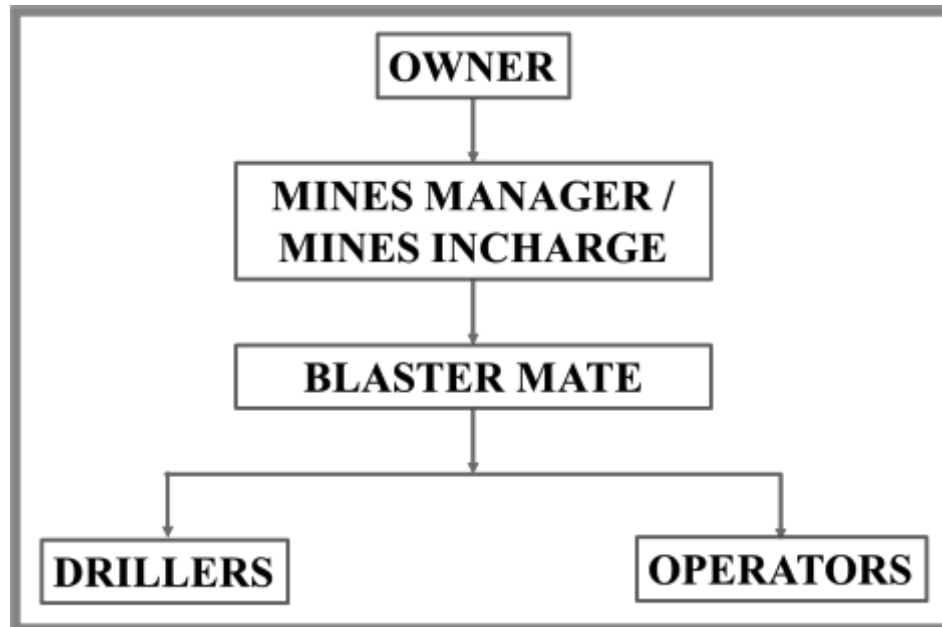
### **10.2.2 ENVIRONMENTAL MANAGEMENT CELL:**

The Mines Manager/Mine Incharge will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level



control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided below:

**Figure 10.1: Organization Chart**



The Mines Manager/Mines Incharge in the mine project site will be directly responsible for various environmental activities in the mine. The owner will correlate and oversee the environmental activities and their effective implementation in consonance with the guidelines in the EMP. The Mines Manager/Mines Incharge will oversee the environmental administration at the mine and he will directly supervise all activities of environmental administration on environmental issues. Necessary assistance from sub ordinates, external consultants and laboratories shall be taken.

Environmental control measures will span various factors like land degradation, air, water and soil quality, noise levels, effective land reclamation for excavated areas, afforestation measures, etc. The administrative functions are given below.

- ❖ To observe the implementation of environmental control measures.
- ❖ To study the effects of project activities on the environment.

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- ❖ To ensure implementation of Plantation Programme. Regular monitoring of survival rate of plants is carried out to achieve the desired result.
- ❖ To keep records of monitoring etc., in a systematic way, so as to facilitate easy access, when needed by statutory agencies, etc. Also send prescribed returns to statutory authorities.
- ❖ To ensure that adequate fencing and plantation is carried out in the safety zones.
- ❖ Conducting environmental studies and reporting to SPCB.
- ❖ To interact and liaise with Government Departments.
- ❖ To evaluate the performance of existing pollution control equipment and systems periodically and take timely action to keep the equipment at its optimum performance condition.
- ❖ To take immediate preventive action in case of some unforeseen environmental pollution attributable to the project.
- ❖ Conducting safety audits and programmes to create safety awareness in workers/ staff.
- ❖ Conducting annual health audits to detect any health problems promptly in the workers/staff. This will reduce occupational health problems.
- ❖ Imparting training on safety and conduct safety drills to educate employees. Firefighting equipment and system has to be kept in 'ready-to-fight' condition.
- ❖ Carrying out socio economic study in the surrounding areas to find out the benefits derived by the society due to the project and also to fulfill the deficiency, if any, immediately.
- ❖ Ensuring proper mine closure arrangements





### **10.2.3 ENVIRONMENTAL MANAGEMENT PLAN:**

#### **10.2.3.1 General:**

Systematic monitoring systems and well-conceived and efficient Environment Management Plan will ensure that during the project operations, the various environmental parameters, are well within the statutorily sustainable limits. The environmental control measures proposed to keep various environmental parameters of the project in terms of air, water, noise, land, biological environment, etc. has been described below.

#### **10.2.3.2 Air Quality:**

With regards to air quality, to mitigate the fugitive and gaseous emission resulting from mining and allied activities, the following control measures are proposed to be undertaken:

- Regular water sprinkling in the transport roads using mobile tankers for dust suppression.
- Controlled blasting techniques with NONEL.
- Provision of dust filters / mask to workers working at highly dust prone and affected areas.
- Covering of drill holes with wet cloth, using sharp drill bits
- Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
- Proper maintenance of haul roads, HEMM and dumpers.
- Covering of loaded tippers with tarpaulins during transportation
- Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
- Besides, there will be good green belt cover will be developed around mine periphery and in safety zone.
- Green netting will be carried out around the lease periphery on all sides.

### **10.2.3.3 Water Environment:**

There will be no process effluent generated from this project. The domestic sewage to be generated will be collected in septic tank with soak pit arrangements. Besides, there will be no waste dumps or stockpiles within the lease area as the entire material will be directly despatched to the consumers.

Surface runoff management structures such as garland drain connected to a settling pond will be constructed around the quarry to collect the rain water. The supernatant clear water from the settling pond will be provided to nearby downstream users. Towards rainwater harvesting, the rainwater harvested in the mine will be used to meet the water requirements during mining and excess water in consultation with villagers and in line with government practices will be out in to the nearby stream or shall be distributed to the nearby villages as per their need.

There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations

### **10.2.3.4 Noise Environment:**

During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the noise generated due to mining and allied activities:

- Good plantation will be carried out in the safety zone areas
- Noise protectors, insulation of operator cabins, installation of silencers in machineries, etc.
- Proper and regular maintenance of equipments
- Providing earplugs to workers exposed to higher noise level.
- Providing in-built mechanism for reducing sound emissions.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.

- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

#### **10.2.3.5 Ground Vibration**

During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the ground vibration caused due to blasting activities:

- ❖ Controlled blasting techniques to maintain the peak particle velocity (PPV) below DGMS prescribed levels.
- ❖ Ideally formulating drilling and charging pattern and ensuring using less charge per delay.
- ❖ To contain fly rocks, stemming column will not be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- ❖ Blasting will not be carried out when strong winds are blowing towards the inhabited areas. Blasting will be done during midday time and never at night.
- ❖ Proper care and supervision during blasting by a competent and experienced person.
- ❖ Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

Further details regarding the same has been provided under section 4.4.2, Chapter-IV.

#### **10.2.2.6 Biological Environment:**

The mining lease area and 10km buffer zone are devoid of declared ecologically sensitive features such as national parks, sanctuaries etc. Besides, no Schedule-I animals are observed in the core and buffer zone. There will be no major clearance of vegetation involved in this project. However, good greenbelt and plantation programmes are planned within the lease area.

In the lease area, safety barrier 7.5m around the periphery, 10m for cart track. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone

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area. This will boost the biological, visual and aesthetic outlook of the area. Elaborate details regarding the same is provided under section 4.6.4, Chapter-IV.

**10.2.2.7 Socio-Economic Environment:**

The proposed project operation will provide positive impacts in the region on the employment area as well as on physical and social infrastructural status. Many other tangible benefits will be gained by the local people in the surrounding areas due to ancillary units, trading operations, contractual needs, casual labor, green belt development, etc. Towards the socio-economic development of the surrounding area, the proponent has earmarked an amount of Rs.5.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner.

**10.3 ENVIRONMENTAL POLLUTION CONTROL COST:**

In this proposed quarry Implementation of environmental control measures as stated above involves capital as well as recurring expenses. The probable capital and recurring environmental control cost are calculated and given below **Table No – 6.5**

**Table 10.1: Environmental Control Cost**

			Rs. In lakhs	
S. No	Mitigation Measure	Capital cost	Recurring Cost /Annum	
<b>Air Environment</b>				
1	Water sprinkling	8.00	0.50	
2	Installing wheel wash system near gate of quarry	0.50	0.20	
3	Muffle blasting – To control fly rocks during blasting	--	0.05	
4	Wet Drilling with dust extraction	0.25	0.03	
5	Environmental Monitoring	--	0.50	
6	Transport Trucks -Monitoring exhaust fumes, covering with tarpaulin, monitoring manually with security guard to avoid overloading and installation of speed governors, Parking area with flaggers for traffic management	1.67	0.53	
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	--	0.46	
<b>Sub-Total (A)</b>		<b>10.42</b>	<b>2.26</b>	
<b>Noise Environment</b>				
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	6.59	
<b>Sub-Total (B)</b>		<b>0.50</b>	<b>6.59</b>	
<b>Water Environment</b>				
9	Surface Runoff Management Structures	0.23	0.05	



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<b>Sub-Total (C)</b>		<b>0.23</b>	<b>0.05</b>
<b>Implementation of EC, Mining Plan &amp; DGMS Condition</b>			
10	Waste Management - Collection and Disposal	0.30	0.22
11	Fencing and Green Net Provision	4.56	0.10
12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.72	0.45
13	Sign Boards -safety precaution signages, EC Conditions display board	0.20	0.03
16	Installation of CCTV cameras	0.30	0.05
17	Remuneration of statutory persons	--	7.80
<b>Sub-Total (D)</b>		<b>6.08</b>	<b>8.65</b>
<b>Green Belt Development</b>			
34	Plantation Inside the lease area(200 Nos.)	0.40	0.06
35	Plantation Outside the lease area (950 Nos.)	2.85	0.29
<b>Sub-Total (E)</b>		<b>3.25</b>	<b>0.35</b>
<b>Grand Total</b>		<b>20.48</b>	<b>17.89</b>

Towards EMP measures, Rs.20.48 lakhs is allocated under capital cost. Besides, Rs.17.89 lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue.

**10.4 CONCLUSION:**

A meticulously well planned Environmental Management Plan, with various programme schedules and timely execution objectives, as above, will ensure that the future environmental quality in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern and living conditions of the local community around the project.

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## **CHAPTER 11**

### **SUMMARY & CONCLUSION**

#### **11.1 INTRODUCTION:**

**Thiru. S.Ramachandran** proposes to operate a **Rough Stone and Gravel Quarry** Survey No. at 672/3, 674, 675/2 and 676/3 over an area of 2.28.0 Ha in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu and has initiated action towards obtaining environmental clearance.

It is proposed to mine 1,97,455 m<sup>3</sup> of Roughstone and 46,896 m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 20m as per approved ToR as against the mining plan approved quantity of 2,39,140 m<sup>3</sup> of Roughstone and 46,896 m<sup>3</sup> of Gravel and 31,264 m<sup>3</sup> of Weathered Rock for a period of 5 years upto a depth of 25m.

Although the individual lease area of this project is less than 5 Ha, the other existing quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing. The details of the quarries located within the 500m radius of the project is given vide **Annexure-3**. A cumulative impact study has been carried out and furnished in **Para 7.3, Chapter-VII**.

This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide letter no. SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022 dated 14.07.2022 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

#### **11.1.1 STATUTORY APPROVALS:**

<b>S.No</b>	<b>Statutory Approval</b>	<b>Authority</b>	<b>Letter Number and Date</b>	<b>Reference</b>
1.	<b>Precise Area Communication Letter</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	KV1/664/2021-kaniyamam dated:11.02.2022	<b>Annexure-1</b>
2.	<b>Mining Plan Approval</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	Rc. KV1/664/2021-kaniyamam, dated 11.02.2022.	<b>Annexure-2</b>

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3.	<b>Details of other quarries within 500m radius</b>	Assistant Director, Dep. of Geology & Mining, Virudhunagar	Roc. KV1/664/2021-kaniyamam, dated 17.03.2022	<b>Annexure-3</b>
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**11.1.2 ENVIRONMENTAL CLEARANCE APPLICATION:**

Particulars	Details
<b>Terms of Reference</b>	Received from SEIAA, Tamil Nadu vide their Lr No.SEIAA-TN/F.No.9271/SEAC/ToR-1208/2022. Dated:14.07.2022
<b>Baseline Data Collection</b>	Carried out by Creative Engineers & Consultants , Chennai for Summer Season (Dec 2022 to Feb 2023)

**11.2 SALIENT FEATURES OF THE PROJECT:**

**Table 11.1: Site Details**

<b>Location</b>	Ethirkottai village, Vembakottai Taluk, Virudhunagar District.
<b>Survey No.</b>	672/3, 674, 675/2 and 676/3
<b>Coordinates</b>	<b>Latitude:</b> 9°21'49.3"N to 9°21'56.8"N <b>Longitude:</b> 77°44'23.1"E TO 77°44'28.0"E
<b>Nearest Highway</b>	SH-186 (Vembakottai – Rajapalayam) – 1.75Km (SW) SH-183 (Alangulam – Sivakasi) – 3.4Km (W) SH-187(Vembakottai – Sivakasi) – 4.25Km (E)
<b>Nearest Village</b>	Lakshmpuram Village -950m (SW)
<b>Nearest Town</b>	Sivakasi – 13Km (NE)
<b>Nearest Railway Station</b>	Sivakasi – 12km (NE)
<b>Nearest Airport</b>	Madurai – 65.0 Km (NE)
<b>Topography</b>	Plain terrain, dry lands with scarce vegetation.
<b>Accessibility</b>	The lease area can be approached from M.Madathupatti - Reddiyapatti Road on the northern side of the lease area. This connects SH-183(Alangulam – Sivakasi) on the western side of the lease area at a distance of 3.4Km and to SH-187(Vembakottai – Sivakasi) at a distance of 4.25Km on the eastern side. Besides, SH-186 lies at a distance of 1.75Km on the southern side of the lease area.
<b>Drainage</b>	Kayalkudi River lies at a distance of 1.5Km on the south western side of the lease area.

**Table 11.2: Environment Setting of The Study Area**

S.No	Particulars	Name	Distance(Km)	Direction
1	Nearest Highway	SH-186 (Vembakottai –Rajapalayam)	1.75	SW
		SH-183 (Alangulam – Sivakasi)	3.4	W





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		SH-187(Vembakottai – Sivakasi)	4.25	E
2	Nearest Railway Station	Sivakasi	12	NE
3	Nearest Airport	Madurai	65	NE
4	Nearest Village	Lakshmipuram	0.95	SW
		Ettakapatti Village	1.4	NE
		Kundayiruppu Village	1.8	SW
		Editkottai Village	1.9	NW
5	Nearest Town	Sivakasi	12	NE
6	Notified Archaeologically important places, Monuments	Vijayakaraisalkulam Archeological Site	4.96	SW
7	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil	--	--
8	Reserved / Protected Forests	Nil	--	--
9	Nearest Water Bodies	Odai	0.200	NW
		Odai	0.275	NW
		Odai	0.255	SE
		Kayalkudi River	1.5	SW
		Marugal Odai	3.7	SW
		Vaippar River	4.1	SE
		Uppu Odai	7.2	SE
		Nedunkulam odai	5.6KM	W
9	Defence Installations	Nil	--	--
10	Seismic Zone	Zone – II (Least Active)	--	--
11	Other Industries in the study area	Other than few rough stone quarries, Crusher, Fireworks unit there are no other industries in the nearby region.		

**Table 11.3: Technical Description**

<b>PARTICULARS</b>	<b>DETAILS</b>				
Geological reserve	Roughstone – 4,56,160cum , Gravel- 68,424cum Weathered Rock-45616cum				
Mineable reserve	Roughstone – 2,39,140cum , Gravel- 46,896cum Weathered Rock-31,264cum				
Method of Mining	Open cast mechanized mining method with drilling, blasting, excavation, loading and transportation of Roughstone to needy buyers.				
Production	<b>Year</b>	<b>Roughstone (m3)</b>	<b>Weathered Rock (m3)</b>	<b>Gravel(m3)</b>	<b>Total(m3)</b>
	I	29415	14036	21054	64505
	II	52530	5612	8418	66560



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PARTICULARS	DETAILS				
		III	37740	11616	17424
	IV	58205			58205
	V	19565			19565
		<b>197455</b>	<b>31264</b>	<b>46896</b>	<b>275615</b>
Waste Generation and Management	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. The top overburden in the form of Gravel and weathered rock will be loaded into tipper and marketed to needy customers on payment of necessary Fees to Government. The excavated rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.				
Ultimate Depth	20m				
Man power	18 People directly and more than 50 people indirectly				
Mode of transport	By Road				
Water requirement	10 KLD				
Source of water	The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.				
Power requirement	All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid.				
Life of the mine	5 Years				
Project cost	Rs. 77,28,230 /-				

**11.3 EXISTING ENVIRONMENTAL SCENARIO:**

**11.3.1 GENERAL:**

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Winter Season (December 2022 to February 2023)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.



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**11.3.2 SOCIO-ECONOMIC STATUS:**

The proposed quarry is located in in Edirkottai Village, Vembakottai Taluk, Virudhunagar District. Based on 2011 census data, in the 10km radius the following are present:

**Table 11.4: Details of Buffer Zone**

Taluk Name	District Name	No. of Villages	No. of Urban Areas
Sattur	Virudhunagar	4	--
Sivakasi	Virudhunagar	22	4
<b>Total</b>		<b>26</b>	<b>4</b>

**Table 11.5: Social, Economic And Demographic Profile of the Study Area**

Details	Population	Percentage
<b>A. Gender-wise distribution</b>		
Male Population	85087	49.55
Female Population	86618	50.45
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>B. Caste-wise population distribution</b>		
Scheduled Caste	36778	21.42
Scheduled Tribes	158	0.09
Other	134769	78.49
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>C. Literacy Levels</b>		
Total Literate Population	117410	68.38
Others	54295	31.62
<b>Total</b>	<b>171705</b>	<b>100</b>
<b>D. Occupational structure</b>		
Main workers	84654	49.30
Marginal workers	5822	3.40
<b>Total Workers</b>	<b>90476</b>	<b>52.70</b>
<b>Total Non-workers</b>	<b>81229</b>	<b>47.30</b>
<b>Total</b>	<b>171705</b>	<b>100</b>

**11.3.2.1 SAMPLE SURVEY:**

Nearby villages were visited for conducting sample Village survey on all socio-economic aspects and requirements of the people. The existing socio-economic scenario is studied and CER activities are also suggested to the proponent. The study details are given in **Para 3.2.4, Chapter – III.**



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**11.3.3 EXISTING ENVIRONMENTAL QUALITY:**

**Table 11.6: Baseline Data**

<b>A) METEOROLOGICAL DATA</b>	<b>Monitoring Location - Near Mine Lease Area</b>		
<b>PARAMETERS</b>	<b>MINIMUM</b>	<b>MAXIMUM</b>	
Temperature in °C	16.1	35.0	
Humidity in %	12.0	99.0	
Wind speed Km/Hr	<1.8	27.7	
Predominant wind direction (From)	NE		
<b>B) AMBIENT AIR QUALITY</b>	<b>Monitoring Location – 5 locations</b>		
<b>PARAMETER</b>	<b>RESULT (µg/m3)</b>		<b>*LIMIT (µg/m3)</b>
<b>Location</b>	<b>Core Zone</b>	<b>Buffer Zone</b>	
Particulate Matter (Size <10 µm)	51.4 – 68.3	41.4 – 60.2	100
Particulate Matter (Size <2.5 µm)	25.2 – 33.6	19.2 – 28.9	60
Sulphur Dioxide (as SO <sub>2</sub> )	5.4 – 9.0	3.3 – 8.3	80
Nitrogen Dioxide (as NO <sub>2</sub> )	8.2 – 13.1	6.0 – 11.8	80
<b>Conclusion:</b> The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m3, 60 µg/m3, 80 µg/m3 & 80 µg/m3. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m3)			
<b>C) WATER QUALITY</b>	<b>Monitoring Location – 5 locations</b>		
<b>PARAMETER</b>	<b>Result</b>	<b>*LIMIT (µg/m3)</b>	
pH at 25 °C	6.96 – 7.54	<b>6.5-8.5</b>	
Total Dissolved Solids, mg/L	510 – 652	<b>2000</b>	
Chloride as Cl <sup>-</sup> , mg/L	106 – 215	<b>1000</b>	
Total Hardness (as CaCO <sub>3</sub> ), mg/L	174 – 492	<b>600</b>	
Total Alkalinity (as CaCO <sub>3</sub> ), mg/L	112– 582	<b>600</b>	
Sulphates as SO <sub>4</sub> <sup>2-</sup> , mg/L	11.4 – 82.9	<b>400</b>	
Iron as Fe, mg/L	0.04– 0.07	<b>0.3</b>	
Nitrate as NO <sub>3</sub> , mg/L	BDL(D.L – 1.0)– 2.58	<b>45</b>	
Fluoride as F, mg/L	0.44 – 0.58	<b>1.5</b>	
<b>Conclusion:</b> The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.			



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D) NOISE LEVELS		Monitoring Location – 5 locations	
PARAMETER	RESULT dB(A)		*LIMIT (µg/m3)
	Day Equivalent	Night Equivalent	
Core Zone	45.5	38.4	90
Buffer Zone	45.7 – 47.8	36.2 – 39.8	Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)

\*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.

E) SOIL QUALITY		Monitoring Location – 3 locations	
PARAMETER	Range of values		
pH	6.92 – 7.32		
Electrical Conductivity (µmho/cm)	48.96 – 80.57		
Organic matter (%)	0.62 – 1.34		
Total Nitrogen (mg/kg)	116 - 195		
Phosphorus (mg/kg)	1.36 – 2.86		
Sodium (mg/kg)	695- 1022		
Potassium (mg/kg)	530 -834		
Soil is of Sandy Clay type.			

**F) LAND ENVIRONMENT:**

For the present study on land use pattern in the study area, remote sensing satellite data have been used. The area estimated of land use categories around the 10km buffer zone is provided below:

**Table 11.7: Land Use in 10Km Buffer Zone**

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture	52.17	16.71
2	Fallow Land	126.84	38.10
3	Land With Scrub	78.72	25.22
4	Land Without Scrub	29.51	9.45
5	Water bodies	8.23	2.64
6	Mining Area/ Industries	4.10	1.31
9	Settlement / Infrastructure	20.56	6.56
	<b>Total</b>	<b>311.77</b>	<b>100</b>

From the above table it is seen that 16.73 % of the study area is agriculture land and 38.10 % are fallow land. Land with scrub constitutes 25.25 %.



### **G) BIOLOGICAL ENVIRONMENT:**

**Flora:** The lease area is a non forest, private patta land with thorny bushes and partly minedout area. The lease area is dominated with *Acacia nilotica* & *Prosopis juliflora*. The detailed list of plants found in the core zone are given in Table no – 3.23 . The Dominated species in the buffer zone are *Azadirachta indica*, *Albizia lebbek* *Murraya koenigii* *Borassus flabellifer*, *Sygygium cumuni* *Prosopis juliflora*, *Gmelina arborea*, *Acacia auriculiformis* etc. Patches of coconut farms Sunflower, Banana, Nithiyakalani cultivation, are also observed in the study area.

**Fauna:** There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. No wild mammalian species was directly sighted during the field survey. There is no Schedule I species in the core & buffer zone. The list of fauna within the study area is given in Table No – 3.27.

### **H) HYDROLOGICAL STUDY:**

The lease area is a barren, patta land which is covered with scrubs and thorny bushes and part of lease area is already minedout . There is no major vegetation found in the lease area. The lease area is a plain land that is sloping towards the south eastern side of the area.

There are no major perennial water bodies in proximity to the lease area. There are a few tanks located in the study area. The drainage map prepared from the survey of India topographic maps shows the presence of few streams running in a dendritic pattern

The general trend of depth to water level for Vembakottai Block, Virudhunagar District, Tamil Nadu the was obtained from the data obtained from India-WRIS, Department of Water Resources, Ministry of Jal Shakti.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels. The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major

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water seepage within the mine is expected. From the nearby working mines, no such seepage is also observed.

**11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:**

**11.4.1 GENERAL:**

This is a proposed project and Semi – Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

**11.4.2 AIR ENVIRONMENT:**

The principal sources of air pollution in the area due to mining and allied activities are dust generation in the mine due to various activities such as excavation of material, movement of HEMM, loading, unloading and transportation operations.. Besides, Gas emission also occur as a result of emission of SO<sub>2</sub>, NO<sub>x</sub>, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. The following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

**Table 11.8: Mitigation Measures – Air Environment**

S.No	Activity	Mitigation Measures
1	Drilling	Usage of Drill bits in good condition
		Covering of drill holes with wet cloth
		Usage of sharp drill bits for drilling of holes.
		Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
		Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
		Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
		Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Proper maintenance of HEMM
		Enclosures for operator cabin.



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		Imparting sufficient training to operators on safety and environmental parameters.
		Proper maintenance of hauling equipments.
		Avoiding overloading of dumpers.
4	Transportation	Regular wetting of transport road using mobile water tanker.
		Proper maintenance of haul road and other roads
		Setting up of tyre wash facility in the transport road.
		Avoiding overloading of tippers
		Covering of loaded tippers with tarpaulins during transportation
		Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
5	Others	Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
		Green netting will be carried out around the lease periphery on all sides.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Ground Level Concentration (GLC) have been computed using hourly meteorological data for particulate matter PM10 and PM2.5.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM<sub>10</sub> are in the range of 51.6 µg/m<sup>3</sup> to 70.5 µg/m<sup>3</sup> and with respect to PM<sub>2.5</sub> are in the range of 25.0 µg/m<sup>3</sup> to 34.6 µg/m<sup>3</sup> which are within the statutory limits in each case.

For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.





**11.4.3 WATER ENVIRONMENT:**

**Water Requirement:** The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose.

The activity / source of pollution, its impact / consequence, proposed control measures are explained below:

**Table 11.9: Mitigation Measures – Water Pollution**

S.No	Source	Consequence	Mitigation Measures
A	Domestic use	Generation of waste water	The domestic sewage to be generated from the project will be collected in septic tank with soak pits.
B	Rainfall	Runoff from waste dump and stack	Towards surface runoff management, a garland drain of length 800m will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users.
		Rainwater Harvesting	The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.
C	Drainage Course	Disturbance to drainage course	There is an odai at a distance of 200m (NW), 275m (NW) and at 225m (SE) side of the lease area. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations

- **Stage of Groundwater Development:** The groundwater resource data of Virudhunagar district was obtained from the data provided in the technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Virudhunagar District.’ Based on the report it is seen that this area can be categorized as ‘Safe’ from ground water development point of view.
- **Generation of mine pit water:** The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering. In the nearby region, the formations are compact with less intergranular porosity and



fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 20m. The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation.

#### **11.4.4 NOISE ENVIRONMENT:**

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding village. Hence, by implementing the following mitigative measures for noise control, the impact on noise levels will continue to be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of green net in lease periphery



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Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

**11.4.5. VIBRATION:**

To reduce ground vibratory conditions, various control measures will be implemented such as keeping PPV below 10mm/s for 8-25hz frequency range, formulating drilling and charging pattern with less explosive charge, initiating sequence and using NONEL, carrying out blasting with minimum charge per delay, avoiding blasting during strong winds etc. By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-1997. Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance. Elaborate details regarding the same are provided under section 4.4.2, Chapter-IV.

**11.4.6 IMPACT ON LAND ENVIRONMENT:**

The entire mine lease area of 2.280 Ha is a own patta land. There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Plantation will be carried out in this safety zone area. Mining will be carried out up to 20m depth for 5 years. Ultimately the entire mined out area of 1.800 Ha will be left as water body. 0.050 Ha will be the mine roads & infrastructure, 0.360 Ha will be covered with vegetation, and 0.070 will be fencing. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized.

**11.4.7 BIOLOGICAL ENVIRONMENT:**

Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation. In the lease area, safety barrier 7.5m around the periphery and 10m safety zone for cart track is left. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. About 1150 trees will be planted in and around the lease area.

**11.4.8 SOCIO ECONOMIC ENVIRONMENT:**



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The entire lease area is a private patta land. Hence, there are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here. The mining operations in the proposed quarry will employ about 18 people. Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service related activities connected with the project operations.

Towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner. In consultation with the locals based on the need & priority it will be implemented.

**11.4.9 OCCUPATIONAL HEALTH AND SAFETY ASPECTS:**

In order to ensure minimisation of occupational health and safety problems in the project operation, the following preventive remedial measures will be effectively exercised in the project operations, so as to comply with applicable standards.

- Medical examination of workers at pre-entry level stage of workers, etc., by qualified doctors, with periodical examination of all workers/staff at least once a year, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

**11.4.10 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:**

From this proposed quarry the entire output will be transported to the consumers like external crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. There will be about 3 trips per hour. The transport route can easily absorb this negligible traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- ❖ Water sprinkling on Rough stone in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.



- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.

#### **11.4.11 WASTE MANAGEMENT:**

Since the entire mined out material will be used there will not be any solid waste generation from this project. There is no process effluent generation from this mine. Hence no liquid waste is generated.

The hazardous waste generated in this mine will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc. It will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

#### **11.5 ENVIRONMENTAL MONITORING PROGRAMME:**

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits.

Monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

Towards EMP measures, Rs.20.48 Lakhs is allocated under capital cost. Besides, Rs.17.89 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

## 11.6 ADDITIONAL STUDIES:

The additional studies covered for this EIA / EMP report are:

1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. R&R Plan
4. Mine closure plan

This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.

Elaborate description in respect of Risk Assessment and Mine closure plan are given in **Chapter - VII**.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarry Considering that the lease period of the existing quarry will be coming to an end shortly, this proposed quarry will serve more as a replacement for the existing quarries to ensure meeting the present Roughstone demands. For the proposed quarry of Thiru Jacob Rajamani and the subject project, cumulative impact study has been carried out and salient details are provide below:

**Air :** The cumulative impact on ambient air quality for PM<sub>10</sub> and PM<sub>2.5</sub> due to the operations of these proposed projects are predicted based on Air Quality Model simulations. It can be seen that the resultant added concentrations with baseline figures even at worst scenario and cumulative impact of the projects show that the values of ambient air quality with respect to PM<sub>10</sub> are in the range of 51.6 µg/m<sup>3</sup> to 72.1 µg/m<sup>3</sup> and with respect to PM<sub>2.5</sub> are in the range of 25.0 µg/m<sup>3</sup> to 35.6 µg/m<sup>3</sup> which are within the statutory stipulations in respective case.



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**Water** : The water requirement for both these project is 12.5KLD comprising 10KLD for S.Ramachandran Quarry and 2.5 KLD for Thiru Jacob Rajamani Quarry. Though it may be sourced from outside agencies initially, for these projects it is planned to use the rain water collected in the mine sump later. Groundwater intersection is not envisaged due to both the quarrying operations. Besides, the stage of groundwater development in Vembakottai Taluk based on technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Virudhunagar District.’ is categorized as ‘Safe’ thus proving that there is further scope for groundwater development. Hence, no major impact is expected on groundwater regime due to the cumulative project operations.

**Noise** :Cumulative post project noise levels in the nearby 4 villages are within the statutory limits of 55dB(A). Besides it is proposed to carry out various mitigative measures such as carrying out greenbelt and afforestation to act as acoustic barriers.

**Vibration**: By Carrying out controlled blasting using Nonel milli second delay detonator, Optimum design for burden and spacing & reducing the explosive charge per delay to minimum in both the projects no adverse impact due to blasting vibration is expected.

**Traffic**: The mined out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The total trips from these projects there will be about 4 trips per hour. The existing road can absorb this traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

**Socio-Economy**: The mining operations will provide direct employment opportunity and indirect employment opportunity for scores of people through allied opportunities in logistics, contract workers, trading, repairing works etc. Towards development of the surrounding area, various activities will be carried out under Corporate Environmental Responsibility for these projects.

**Land use**: For the projects, in the post mining stage it will be ensured that the entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. The rainwater harvested in the mined out void shall be utilized to meet the water requirement.



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**11.7 CONCLUSION:**

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining project will benefit this region in the fields of potential employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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## CHAPTER 12

### DISCLOSURE OF CONSULTANTS ENGAGED

**Creative Engineers & Consultants**, Chennai is an **NABL** accredited testing laboratory and **NABET** accredited EIA consultancy. Established over 25 years ago, this company has steadily made good strides in the environmental impact assessment fields, and is also one of the first companies to get accredited by NABET as an Accredited Consultant Organization as early as 2011. Creative Engineers & Consultants has to its credit, successful completion of numerous EIA/EMP reports, grant of environmental clearances and periodic environmental monitoring works. Presently, the company has been accredited by NABET as a 'Category-A' organization for the sectors of Mining of Minerals (opencast only), Thermal Power Plants, Mineral Beneficiation and Cement Plants with the accreditation valid upto 23.12.2023. The team of experienced professionals that are a part of this organization has been detailed below.

**Figure 12.1: Disclosure of consultants engaged**

EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
Mr. P. Giri	AMIE (Mining)	EIA Coordinator & Functional area Expert (AP,NV,HW),	Over 30 years of experience in EIA/EMP report, mine plan preparation, including modeling
Mr. K. Shankar	M.Sc (Geology). PGMEMG	Functional area Expert (GEO, HG, SHW, RH) & IBM approved RQP.	Over 25 years of experience in EIA/EMP report, Mine plan, hydrological report preparation
Dr. N. Radhakrishnan	M.Sc., M.Tech., Ph.D	Functional area Expert (Land use)	Over 25 years of experience in using the advanced spatial analysis techniques in GIS environment. Specialized in Spatial Information Technology and Applications (remote sensing, GIS)
Mr.S.S.Rajendran	M.Sc. (Pharmaceutical Chemistry)	Lab head	More than 9 years of experience in Environmental laboratory.



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EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
Mr. R. Babu raj	M.A (Sociology), B.Com(Y.L&Cost), ITI, Advance Diploma in Computer application	Functional Area Expert (Socio Economy)	Over 13 years of experience in dispersion modeling, computer applications. Specialized in CAD and computer software, applications. 5years experience in the field of socio economy and its allied report preparation.
Mr. B. Govindaraman	B.Sc.	Field technician	Over 20 years of field monitoring & data collection experience
Dr.B.Swamynathan	M.Sc (Ecology & Environmental Sciences), M.Phill (Botany), Ph.D (Ecology & Environmental Sciences)	EIA Coordinator, FAE (EB,SC,LU & AP)	More than 12 years of experience in Environment and allied fields.
Ms. G. Sandhya	B. Tech Chemical Engineering M.Tech Environmental Engineering	EIA Coordinator, FAE (AQ, WP)	Over 5 years experience in preparation of EIA/EMP reports

\* \* \* \* \*





**புவியியல் மற்றும் சுரங்கத்துறை**

உதவி இயக்குநர் அலுவலகம்,  
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,  
விருதுநகர்.

ந.க.எண்: கேவி1/664/2021-கனிமம்; நாள்: 11.02.2022.

**குறிப்பாணை**

**பொருள்:** கனிமங்களும் குவாரிகளும் - விருதுநகர் மாவட்டம் - வெம்பக்கோட்டை வட்டம் - எதிர்கோட்டை கிராமம் - பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேர் - பத்து வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கல் - சரியான பரப்பு (Precise Area) தேர்வு செய்யப்பட்டது - சுரங்கத்திட்டம் மற்றும் மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்க கோருவது - தொடர்பாக.

- பார்வை:**
1. திரு.சு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார், எதிர்கோட்டை விண்ணப்பம் நாள்: 08.09.2021.
  2. இவ்வலுவலக கடிதம் எண் ந.க.கேவி1/664/2021, நாள்: 15.09.2021.
  3. சாத்தூர் வருவாய் கோட்டாட்சியர் கடிதம் எண்: மூ.மு.அ2/4675/2021 நாள்: 31.01.2021.
  4. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 09.02.2022.
  5. 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 மற்றும் 42.
  6. அரசாணை எண்.169 தொழில் (எம்.எம்.சி.1) துறை, நாள்: 04.08.2020.
  7. அரசாணை எண்.208, தொழில் (எம்.எம்.சி.1) துறை, நாள்: 21.09.2020.
  8. தொடர்புடைய ஆவணங்கள்.

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விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேரில் 10 வருடங்களுக்கு உடைகல்

(X) S. Rauty

மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கக்கோரி விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை அஞ்சல், E.ரெட்டியாபட்டி கிராமம், கதவு எண்: 1/28 என்ற முகவரியில் குடியிருந்து வரும் திரு.சுராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் என்பவர் பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

சாத்தூர் வருவாய் கோட்டாட்சியர் மற்றும் புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோர் கீழ்க்காணும் நிபந்தனைகளுக்குட்பட்டு மேற்கண்ட புலங்களில் உடைகல், கிராவல் குவாரி குத்தகை உரிமம் ஐந்தாண்டுகளுக்கு வழங்க பரிந்துரை செய்துள்ளனர்.

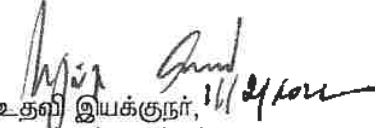
- 1) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு இடைவெளி விடுத்து குவாரி செய்தல் வேண்டும்.
- 2) புலங்களின் அருகில் செல்லும் வண்டிப்பாதைக்கு 10 மீ பாதுகாப்பு இடைவெளி பேணப்பட வேண்டும்.
- 3) பொதுமக்கள் / விவசாய நிலங்களுக்கு பாதிப்பு ஏற்படாத வகையில் தகுதி வாய்ந்த அங்கீகரிக்கப்பட்ட நபர்கள் மூலம் வெடிமருந்துகள் சேமிக்கப்பட்டு குவாரியில் வெடித்தல் வேண்டும்.
- 4) சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.
- 5) குவாரியில் வேலை செய்யும் தொழிலாளர்கள் தொழிலாளர் நலவாரியம் மற்றும் காப்பீடு திட்டத்தில் பதிவு செய்து தொழிலாளர் நலன் பேண்பட வேண்டும்.
- 6) குழந்தை தொழிலாளர்களை குவாரி பணியில் அமர்த்தக் கூடாது.
- 7) கனிமங்களை வாகனங்களில் கொண்டு செல்லும் போது பாதுகாபிகள், பொது மக்கள் பாதிக்காதவண்ணம் தார்பாய்கள் கொண்டு மூடி எடுத்துச் செல்ல வேண்டும்.

எனவே, துறை அலுவலர்களின் பரிந்துரையினை ஏற்றும் நிபந்தனைகளுக்கு உட்பட்டும், விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேர் நிலத்திற்கு 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 மற்றும் 20-ன்படி ஐந்து வருடகாலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக (Precise area) கருதப்படுகிறது.





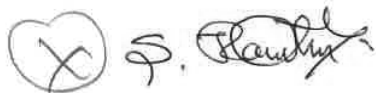
தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண்: 41ன்படி சுவாரி பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்கத் திட்டத்தினை (Mining Plan) 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், விதி எண்: 42-ன்படி மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (State Level Environmental Impact Assessment Authority) இசைவினைப் பெற்று சமர்ப்பிக்குமாறும் மனுதாரர் திரு.சு.ராமச்சந்திரன் கேட்டுக் கொள்ளப்படுகிறார்.

  
உதவி இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
விருதுநகர்

பெறுநர்  
திரு.சு.ராமச்சந்திரன்,  
த/பெ. சுந்தரரெட்டியார்  
கதவு எண்: 1/28  
E.ரெட்டியாபட்டி கிராமம்,  
எதிர்கோட்டை அஞ்சல்,  
வெம்பக்கோட்டை வட்டம்,  
விருதுநகர் மாவட்டம்.

11/2/2022

நகல்  
உறுப்பினர் செயலர்,  
மாநில சுற்றுசூழல் தாக்க மதிப்பீட்டு ஆணையம் (SEIAA),  
சென்னை.



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**From**  
Thiru.T.Selvasekar, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Virudhunagar.

**To**  
Thiru.Ramachandran,  
S/o.Sri.Sundarareddiyar,  
No:1/28, North Street,  
E.T.Reddiapatti,  
Ethirkottai Post,  
Vembakottai Taluk,  
Virudhunagar District.

**Roc.No: KV1/664/2021, Dated: 17.03.2022.**

**Sir,**

**Sub:** Mines and Minerals - Minor Mineral - Virudhunagar District - Vembakottai Taluk - Ethirkottai Village - Patta Land - S.F.Nos: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) and 676/3 (0.43.00) - Extent 2.28.00 Hectares - Quarry lease application preferred by Thiru.Ramachandran for quarrying Rough Stone and Gravel - Approval of Mining Plan - Regarding.

**Ref:** 1. Quarry lease application received from Thiru.Ramachandran dated: 08.09.2021.  
2. The Assistant Director, Geology and Mining, Virudhunagar Rc.No.KV1/664/2021, Dated: 11.02.2022.  
3. Thiru.Ramachandran letter, dated: 17.03.2022.

\*\*\*\*\*

Thiru.Ramachandran has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 2.28.00 Hectares of Patta Land in S.F.Nos: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) and 676/3 (0.43.00) of Ethirkottai Village, Vembakottai Taluk in Virudhunagar District for a period of Five Years (5) Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

2) The application was examined and consented to grant lease to quarrying Rough Stone and Gravel over an extent of 2.28.00 Hectares of Patta Land in S.F.Nos: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) and 676/3 (0.43.00) for a period of Five Years (5) subject to produce Mining Plan for approval.

3) The applicant has submitted the Mining Plan, prepared as per guidelines issued by the Commissioner of Geology and Mining and as per Rules and Acts. The Geological and Mineable reserves are



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discussed in Part - A of the Plan. The applicant can quarry the mineral in the following measurements:-

**GEOLOGICAL RESERVES (As Per Mining Plan)**

Mineral	Section	Length (m)	Width (m)	Depth (m)	Volume CUM	Total Volume CUM
Gravel	PQ-AB	66	136	3.0	26928	68,424
	PQ-CD	46	76	3.0	10488	
	PQ-EF	76	136	3.0	31008	
Weathered Rock	PQ-AB	66	136	2.0	17952	45,616
	PQ-CD	46	76	2.0	6992	
	PQ-EF	76	136	2.0	20672	
Rough Stone	PQ-AB	66	136	20.0	179520	4,56,160
	PQ-CD	46	76	20.0	69920	
	PQ-EF	76	136	20.0	206720	
<b>Total Geological Reserves quantity in Cu.M</b>					<b>5,70,200</b>	
<b>Deduct old pit quantity (Inside the applied area)</b>					<b>-16,560</b>	
<b>=60mx40mx6m</b>						
<b>TOTAL GEOLOGICAL RESERVES</b>					<b>5,53,640</b>	

**MINEABLE RESERVES (As per Mining Plan)**

Mineral	Section	BENCH	Length (m)	Width (m)	Depth (m)	Volume CUM	Mineable Reserves in CUM
Gravel	PQ-AB	I	58	121	3.0	21054	46,896
	PQ-CD	I	46	61	3.0	8418	
	PQ-EF	I	48	121	3.0	17424	
Weathered Rock	PQ-AB	I	58	121	2.0	14036	31,264
	PQ-CD	I	46	61	2.0	5612	
	PQ-EF	I	48	121	2.0	11616	
Rough Stone	PQ-AB	II	53	111	5.0	29415	2,39,140
	PQ-AB	III	48	101	5.0	24240	
	PQ-AB	IV	43	91	5.0	19565	
	PQ-AB	V	38	81	5.0	15390	
	PQ-CD	II	46	51	5.0	11730	
	PQ-CD	III	46	41	5.0	9430	
	PQ-CD	IV	46	31	5.0	7130	
					4830		

*(Signature)*

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	PQ-CD	V	46	21	5.0			
	PQ-EF	II	68	111	5.0	37740		
	PQ-EF	III	63	101	5.0	31815		
	PQ-EF	IV	58	91	5.0	26390		
	PQ-EF	V	53	81	5.0	21465		
<b>TOTAL MINEABLE RESERVES</b>							<b>3,17,300</b>	✓

**Yearwise Production Schedule (As per Mining Plan)**

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	Volume in CUM			Total Production on Cu.m
						Gravel	Weathered Rock	Rough Stone	
I Year	PQ-AB	I	58	121	3.0	21054	--	--	64,505 ✓
	PQ-AB	I	58	121	2.0	--	14036	--	
	PQ-AB	II	53	111	5.0	--	--	29415	
II Year	PQ-CD	I	46	61	3.0	8418	--	--	66,560 ✓
	PQ-CD	I	46	61	2.0	--	5612	--	
	PQ-CD	II	46	51	5.0	--	--	11730	
	PQ-CD	III	46	41	5.0	--	--	9430	
	PQ-CD	IV	46	31	5.0	--	--	7130	
	PQ-AB	III	48	101	5.0	--	--	24240	
III Year	PQ-EF	I	48	121	3.0	17424	--	--	66,780 ✓
	PQ-EF	I	48	121	2.0	--	11616	--	
	PQ-EF	II	63	111	5.0	--	--	37740	
IV Year	PQ-EF	III	63	101	5.0	--	--	31815	63,035 ✓
	PQ-EF	IV	58	91	5.0	--	--	26390	
	PQ-CD	V	46	21	5.0	--	--	4830	
V Year	PQ-AB	IV	48	91	5.0	--	--	19565	56,420 ✓
	PQ-AB	V	38	81	5.0	--	--	15390	
	PQ-EF	V	53	81	5.0	--	--	21465	
<b>TOTAL PRODUCTION</b>						<b>46,896</b>	<b>31,264</b>	<b>2,39,140</b>	<b>3,17,300</b>

The available mineable reserves have been computed as **2,39,140 m<sup>3</sup>** as Rough Stone, Gravel as **46,896 m<sup>3</sup>**, Weathered rock **31,264 m<sup>3</sup>** up to the depth of **25m** from the ground level.

*(A) S. Paulin*




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The Environmental Management Plan and Mine closure plan are discussed Part - B 9 & 10 and all conditions has been incorporated in the Mining Plan as laid down by the authorities.

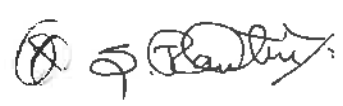
4) In view of the above, in exercise of the powers delegated under Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the Mining Plan submitted by Thiru.Ramachandran for quarrying Rough Stone and Gravel over an extent of 2.28.00 Hectares of Patta Land in S.F.Nos: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) and 676/3 (0.43.00) of Ethirkottai Village, Vembakottai Taluk and Virudhunagar District for a period of 5 years to obtain Environment Clearance from SEIAA, Chennai subject to the following conditions:

1. The Mining Plan is approved without prejudice to any other law applicable to the quarry permission from time to time where such Laws are made by the State Government or any other authority.
2. This approval of the Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959.
3. The Mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
4. The approval of the Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Amendment Act, 2015 or any other connected Laws including, Environment Protection Act, 1986, and the Rules made there under in Tamil Nadu Minor Mineral Concession Rules, 1959.

**Encl:** Two copies of Mining Plan.

  
Assistant Director,  
Geology and Mining,  
Virudhunagar.

**Copy to:**  
The Member Secretary,  
State Level Environmental Impact  
Assessment Authority,  
PanagalMaligai,  
No. 1 Jeenis Road,  
Saidapet, Chennai-15.



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**From**

Thiru.T.Selvasekar, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Virudhunagar.

**To**

Thiru.Ramachandran,  
S/o.Sri.Sundarareddiyar,  
No:1/28, North Street,  
E.T.Reddiapatti,  
Ethirkottai Post,  
Vembakottai Taluk,  
Virudhunagar District.

**Roc.No: KV1/664/2021, Dated: 17.03.2022.**

**Sir,**


**Sub:** Mines and Minerals - Minor Mineral -  
Virudhunagar District - Vembakottai Taluk -  
Ethirkottai Village - Patta Land - S.F.Nos:  
672/3 (0.23.00), 674 (1.20.50), 675/2  
(0.41.50) and 676/3 (0.43.00) - Extent  
2.28.00 Hectares - Quarry lease application  
preferred by Thiru.Ramachandran for  
quarrying Rough Stone and Gravel - Details of  
quarries in 500 meter radius - Regarding.

**Ref:** 1. Quarry lease application received from  
Thiru.Ramachandran dated: 08.09.2021.  
2. The Assistant Director, Geology and  
Mining, Virudhunagar  
Rc.No.KV1/664/2021, Dated: 11.02.2022.  
3. Thiru.Ramachandran letter, dated:  
17.03.2022.

\*\*\*\*\*

Thiru.Ramachandran has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 2.28.00 Hectares of Patta Land in S.F.Nos: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) and 676/3 (0.43.00) of Ethirkottai Village, Vembakottai Taluk and Virudhunagar District for a period of 5 (Five) Years Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

The applicant Thiru.Ramachandran in the reference 3<sup>rd</sup> cited has requested to furnish details of quarries situated within 500 m radial distance from the applied area.



8)

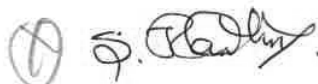
In this connection, it is informed that the details of quarry situated within 500 meter radius from the proposed area for Environmental Clearance as detailed below:

**1) Details of quarry within 500 m radius from the applied area**

S. No	Quarry detail	Village	S.F. No.& Extent (Hect)	Proceedings No. & Lease Period
<b>I Existing Quarry:</b>				
1.	Thiru.S.Ramachandran	Ethirkottai	649/1 , 649/3 668 , 670, 687/3 688/2 <b>3.94.5</b>	KV1/373/2017 Dated: 05-05-2018 07.07.2018 to 06.07.2023
2.	Thiru. T. Kannan, S/o. R. Thirupathi Naicker.	Ethirkottai	640/2 642/3B, 644/2B <b>1.86.0</b>	KV1/15122/2016, Dated: 06.11.2017 20.11.2017 to 19.11.2022
<b>II Abandoned Quarry: - Nil-</b>				
<b>III Present Proposed Quarry:</b>				
1.	Thiru.Ramachandran	Ethirkottai	672/3, 674, 675/2, 676/3 <b>2.28.00</b>	KV1/664/2021 Dated: 11.02.2022
2.	Thiru.S.Kannan, S/o.SubbaNaickar,	Ethirkottai	678/1, 678/3 & 679 <b>1.32.0</b>	dt-12.08.2009 KV1/692/2009
3.	Thiru.T.K.Barath	Ethirkottai	639/2 , 650, 651/1, 651/2 652 etc., <b>4.07.0</b>	KV1/413/2018 16.04.2018
4.	Thiru.T.Raghavan, S/o. Thiruppathi,	Kangar Seval	310 311/2 <b>1.38.50</b>	KV1/382/2019 Dated: 04.07.2020
			<b>14.86.00</b>	

**2) The dimension of the existing pit in the area applied for leases is given below.**

	Length (Max) (M)	Width (Max) (M)	Depth (Max) (M)
Pit - 1	60	40	6



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**3) The period of the earlier Quarry operations (Expired)**

Sl. No.	Extent	SF. Nos.	Village & Taluk	Proceedings No. & date	Period
1	5.03.50	672/3, 674, 675/2, 676/3 etc.,	Ethirkottai & Sivakasi	KV1/2214/2003 Dated: 03.10.2003	03.11.2003 To 02.11.2008

Environmental Clearance	Proceedings & Lease Period	Permit issued & Transported Quantity		Depth (m)
		Rough Stone	Gravel	
	KV1/2214/2003 Dated: 03.10.2003 03.11.2003 To 02.11.2008	10,000 Cu.m	3,500 Cu.m	6m (Average)

*[Handwritten Signature]*  
**Assistant Director,**  
**Geology and Mining,**  
**Virudhunagar.**

**Copy to:**  
 The Member Secretary,  
 State Level Environmental Impact  
 Assessment Authority,  
 PanagalMaligai,  
 No. 1 Jeenis Road,  
 Saidapet,  
 Chennai-15.

*[Handwritten Signature]*

**POPULATION BREAKUP & LITERACY LEVEL IN THE STUDY AREA**

Sl.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION		POPULATION BELOW 6 AGE GROUP		SCHEDULE CASTE		SCHEDULE TRIBE		LITERATES		ILLITERATES		
					TOTAL	M:MALE	TOTAL	F:MALE	TOTAL	F:MALE	TOTAL	F:MALE	TOTAL	F:MALE	TOTAL	F:MALE	
<b>0-2 km,Sivakasi Sub-District, Virudhunagar District</b>																	
1	1	Edirkottai	Rural	4329	2129	2200	465	254	211	331	175	0	0	3086	1656	1430	770
2	2	Kangraseval	Rural	1627	790	837	180	96	84	408	187	0	0	1047	561	486	351
		<b>total (A)</b>		<b>5956</b>	<b>2919</b>	<b>3037</b>	<b>645</b>	<b>350</b>	<b>295</b>	<b>739</b>	<b>343</b>	<b>0</b>	<b>0</b>	<b>4133</b>	<b>2217</b>	<b>1916</b>	<b>1121</b>
<b>2-5 km,Sivakasi Sub-District, Virudhunagar District</b>																	
3	1	Kananjampatti	Rural	3791	1885	1906	450	237	213	695	331	0	0	2554	1391	1163	743
4	2	Alangulam (Part)	Rural	1924	1004	920	164	95	69	480	247	0	0	1473	812	661	259
5	3	Kundayiruppu	Rural	6812	3365	3447	852	424	428	1677	820	0	0	4602	2498	2104	1343
6	4	Kilamininadu	Rural	2388	1190	1198	252	116	136	525	261	0	0	1614	914	700	498
		<b>total (B)</b>		<b>14915</b>	<b>7444</b>	<b>7471</b>	<b>1718</b>	<b>872</b>	<b>846</b>	<b>3377</b>	<b>1692</b>	<b>0</b>	<b>0</b>	<b>10243</b>	<b>5615</b>	<b>4628</b>	<b>2843</b>
<b>5-10 km,Sivakasi Sub-District, Virudhunagar District</b>																	
7	1	Naranapuram (Part)	Rural	2031	987	1044	253	140	113	591	297	0	0	1217	666	551	493
8	2	Anaiyur (Part)	Rural	4919	2408	2511	610	288	322	2630	1281	0	0	3523	1882	1641	870
9	3	Maraneri	Rural	9746	4733	5013	1046	508	538	4251	2110	0	0	6555	3519	3036	1917
10	4	Duraisampuram	Rural	8642	4270	4372	901	442	459	3028	1515	0	0	5597	3111	2486	1886
11	5	Nadukkudi	Rural	4797	2383	2414	575	286	279	2439	1208	0	0	3122	1717	1405	1009
12	6	Vettilayurani	Rural	1285	4773	2352	2421	255	276	1979	964	0	0	3357	1822	1535	886
13	7	Subramaniapuram	Rural	1879	914	965	209	111	98	222	108	0	0	1166	636	530	435
14	8	Salvarpatti	Rural	3563	1776	1787	453	232	221	340	162	0	0	2067	1192	875	912
15	9	Vijayarengapuram	Rural	2977	1471	1506	400	197	203	1455	703	0	0	1832	1036	796	710
16	10	Tayilupatti	Rural	9684	4797	4887	953	498	455	1338	671	58	53	6227	3636	2891	1996
17	11	Kongankulam	Rural	1050	507	543	87	44	43	138	64	0	0	761	409	352	191
18	12	Vembakottai	Rural	4478	2225	2253	573	285	288	756	371	0	0	3128	1714	1414	839
19	13	Vijayakaraisalkulam	Rural	3981	2023	1958	485	255	230	298	145	0	0	2492	1441	1051	907
20	14	Panaiyadippatti	Rural	3005	1507	1498	299	156	143	873	433	0	0	2111	1177	934	564
21	15	Surapatti	Rural	1523	751	772	195	103	92	999	496	0	0	933	525	408	364
22	16	Lakshmiapuram	Rural	5610	2771	2839	577	251	326	1327	652	3	2	3847	2156	1691	1148
<b>Sattur Sub-District, Virudhunagar District</b>																	
23	1	Sankarapandiapuram	Rural	3200	1580	1620	315	163	152	1116	540	0	0	2096	1171	925	695
24	2	Thiukkankurichchi	Rural	2294	1116	1178	269	135	134	143	66	0	0	1409	781	628	550
25	3	Sevalpatti	Rural	4806	2438	2368	569	288	281	579	307	21	12	3098	1795	1303	1065
26	4	Kugarparai	Rural	1290	641	649	119	61	58	167	78	0	0	899	489	410	239
<b>Sivakasi Sub-District, Virudhunagar District</b>																	
27	1	Naranapuram (CT)	Urban	11665	5766	5899	1376	685	691	1372	661	2	1	7979	4336	3643	2256
28	2	Anaiyur (CT)	Urban	24436	12060	12376	2620	1349	1271	2142	1047	8	3	17469	9344	8125	4251
29	3	Viswanatham (CT)	Urban	25555	12773	12782	2770	1410	1360	3672	1818	10	7	18040	9843	8197	4585
30	4	Alangulam (CT)	Urban	4930	2475	2455	456	236	220	398	409	1	1	3809	2052	1757	698
		<b>Total (C)</b>		<b>150834</b>	<b>74724</b>	<b>76110</b>	<b>16841</b>	<b>8388</b>	<b>8253</b>	<b>32662</b>	<b>16115</b>	<b>158</b>	<b>85</b>	<b>103034</b>	<b>56450</b>	<b>46584</b>	<b>29526</b>
		<b>Grand Total (A+B+C)</b>		<b>171705</b>	<b>85087</b>	<b>86618</b>	<b>19004</b>	<b>9394</b>	<b>9394</b>	<b>36778</b>	<b>18150</b>	<b>158</b>	<b>85</b>	<b>117410</b>	<b>64282</b>	<b>53128</b>	<b>33490</b>

\*Source: District Primary Cencens Abstract, Virudhunagar District of Tamilnadu State-2011

## OCCUPATIONAL STRUCTURE IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F. MALE	MALE	F. MALE	MALE	F. MALE	MALE	F. MALE	MALE	F. MALE	MALE	F. MALE	MALE	F. MALE
<b>0-2 km, Sivakasi Sub-District, Virudhunagar District</b>																	
1		Edirkottai	Rural	1178	836	70	34	44	37	11	5	1053	760	131	182	820	1182
2		Kangaraiveval	Rural	478	413	52	38	114	139	3	5	309	231	6	22	306	402
		<b>total (A)</b>		<b>1656</b>	<b>1249</b>	<b>122</b>	<b>72</b>	<b>158</b>	<b>176</b>	<b>14</b>	<b>10</b>	<b>1362</b>	<b>991</b>	<b>137</b>	<b>204</b>	<b>1126</b>	<b>1584</b>
<b>2-5 km, Sivakasi Sub-District, Virudhunagar District</b>																	
3	1	Kananiampatti	Rural	1052	853	36	20	34	29	49	939	755	85	132	748	921	
4	2	Alangulam (Part)	Rural	547	340	21	6	42	58	9	14	475	262	9	9	448	571
5	3	Kundayiruppu	Rural	1707	1406	141	87	344	472	26	19	1196	828	220	251	1438	1790
6	4	Kilammarinadu	Rural	648	417	38	21	53	141	8	14	549	241	75	86	467	695
		<b>total (B)</b>		<b>3954</b>	<b>3016</b>	<b>236</b>	<b>134</b>	<b>473</b>	<b>700</b>	<b>86</b>	<b>96</b>	<b>3159</b>	<b>2086</b>	<b>389</b>	<b>478</b>	<b>3101</b>	<b>3977</b>
<b>5-10 km, Sivakasi Sub-District, Virudhunagar District</b>																	
7	1	Naranapuram (Part)	Rural	572	492	28	15	23	15	7	8	514	454	9	23	406	529
8	2	Anaiyur (Part)	Rural	1406	1113	73	29	103	90	7	55	1223	939	21	43	981	1355
9	3	Maraneri	Rural	2806	2315	97	53	96	78	44	94	2569	2030	24	24	1903	2674
10	4	Duraiwampuram	Rural	2214	1887	226	127	196	225	34	47	1758	1488	334	353	1722	2132
11	5	Nadukkudi	Rural	1327	1156	109	69	154	164	9	23	1055	900	117	152	939	1106
12	6	Vettaiyurani	Rural	1184	857	77	30	81	38	26	21	1000	768	228	240	940	1324
13	7	Subramaniapuram	Rural	498	355	58	33	7	5	3	1	430	316	37	107	379	503
14	8	Salvarpatti	Rural	1043	998	59	36	30	26	10	7	944	929	18	39	715	750
15	9	Vijayarangapuram	Rural	867	867	20	13	18	14	11	84	818	756	8	26	596	613
16	10	Tayiluppatti	Rural	2889	2420	41	19	16	29	19	20	2813	2352	64	46	1844	2421
17	11	Kongankulam	Rural	320	271	11	7	197	222	1	0	111	42	3	1	184	271
18	12	Vembakottai	Rural	1251	795	50	10	133	87	9	10	1059	688	88	219	886	1239
19	13	Vijayakariskulam	Rural	1088	1041	135	111	69	52	6	30	878	848	28	31	907	886
20	14	Panaiyadippatti	Rural	903	820	40	34	96	82	2	2	765	702	28	32	576	646
21	15	Suraripatti	Rural	274	254	4	7	34	22	0	0	236	225	185	195	292	323
22	16	Lakshimpuram	Rural	1570	1198	128	123	507	607	21	26	914	442	119	61	1082	1580
<b>Sattur Sub-District, Virudhunagar District</b>																	
23	1	Sankarapandiapuram	Rural	961	797	123	89	227	200	4	3	607	505	14	24	605	799
24	2	Thilukkankurichchi	Rural	669	594	8	5	76	44	9	5	576	540	49	86	398	498
25	3	Sevalpatti	Rural	1474	1159	59	23	178	229	16	42	1221	865	19	50	945	1159
26	4	Kuganparai	Rural	433	412	165	150	61	107	24	21	183	134	14	20	194	217
<b>Sivakasi Sub-District, Virudhunagar District</b>																	
27	1	Naranapuram (CT)	Urban	3550	2610	28	3	31	10	44	92	3447	2505	42	66	2174	3223
28	2	Anaiyur (CT)	Urban	6745	3957	33	17	61	57	85	98	6566	3785	471	337	4844	8082
29	3	Viswanatham (CT)	Urban	7687	4712	19	3	45	19	97	262	7526	4428	133	171	4953	7899
30	4	Alangulam (CT)	Urban	1350	618	98	11	191	232	61	24	1000	351	103	112	1022	1725
		<b>total (C)</b>		<b>43081</b>	<b>31698</b>	<b>1689</b>	<b>1017</b>	<b>2630</b>	<b>2654</b>	<b>549</b>	<b>975</b>	<b>36213</b>	<b>27052</b>	<b>2156</b>	<b>2458</b>	<b>29487</b>	<b>41954</b>
		<b>Grand Total (A+B+C)</b>		<b>48691</b>	<b>35963</b>	<b>2047</b>	<b>1223</b>	<b>3261</b>	<b>3530</b>	<b>649</b>	<b>1081</b>	<b>42734</b>	<b>30129</b>	<b>2682</b>	<b>3140</b>	<b>33714</b>	<b>47515</b>

\*Source: District Primary Cences Abstract, Virudhunagar District of Tamilnadu State-2011

## EDUCATIONAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Educational Facilities (A1)/ NA(2)	Govt Pre - Primary School (Nursery/LKG/UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior and Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
<b>0-2 km, Sivakasi Sub-District, Virudhunagar District</b>																
1	1	Edirkottai	1	2	2	0	0	0	0	0	0	0	0	0	2	0
2	2	Kangaraseval	1	2	1	1	0	0	0	0	0	0	0	0	1	0
		<b>total (A)</b>		<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>
<b>2-5 km, Sivakasi Sub-District, Virudhunagar District</b>																
3	1	Kananjampatti	1	4	4	2	0	0	0	0	0	0	0	0	4	0
4	2	Alangulam (Part)	1	5	3	3	2	2	0	0	0	0	0	0	3	0
5	3	Kundayiruppu	1	3	3	1	0	0	0	0	0	0	0	0	3	0
6	4	Kilannarinadu	1	2	1	0	0	0	0	0	0	0	0	0	1	0
		<b>total (B)</b>		<b>14</b>	<b>11</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>
<b>5-10 km, Sivakasi Sub-District, Virudhunagar District</b>																
7	1	Nanapuram (Part)	1	6	2	3	2	0	0	0	0	0	0	0	3	0
8	2	Anaiyur (Part)	1	9	6	2	1	0	0	0	0	0	0	0	6	0
9	3	Maraneri	1	2	3	1	0	0	0	0	0	0	0	0	3	0
10	4	Duraiswampuram	1	0	4	2	1	0	0	0	0	0	0	0	4	0
11	5	Nadukkudi	1	3	3	1	0	0	0	0	0	0	0	0	3	0
12	6	Vettaiyurani	1	3	2	1	0	0	0	0	0	0	0	0	2	0
13	7	Subramanlyapuram	1	2	2	1	1	0	0	0	0	0	0	0	3	0
14	8	Salvarpatti	1	2	2	1	0	0	0	0	0	0	0	0	2	0
15	9	Vijayarangapuram	1	3	2	1	0	0	0	0	0	0	0	0	2	0
16	10	Tayilupatti	1	5	5	3	2	1	0	0	0	0	0	0	5	0
17	11	Kongankulam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
18	12	Vembakottai	1	4	5	1	1	1	0	0	0	0	0	0	5	1
19	13	Vijayakaraisakulam	1	2	2	1	1	1	0	0	0	0	0	0	2	0
20	14	Panaiyarpattai	1	3	6	1	1	0	0	0	0	0	0	0	6	0
21	15	Surarpatti	1	2	3	1	0	0	0	0	0	0	0	0	3	0
22	16	Lakshimpuram	1	4	4	0	0	0	0	0	0	0	0	0	4	0
<b>Sattur Sub-District, Virudhunagar District</b>																
23	1	Sankarapandiapuram	1	3	4	1	1	1	0	0	0	0	0	0	4	0
24	2	Thiukkankurichchi	1	1	2	1	0	0	0	0	0	0	0	0	2	0
25	3	Sevalpatti	1	5	2	1	1	1	0	0	0	0	0	0	2	0
26	4	Kuganparai	1	1	1	1	0	0	0	0	0	0	0	0	1	0
		<b>total (C)</b>		<b>61</b>	<b>60</b>	<b>24</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>62</b>	<b>1</b>
		<b>Grand Total (A+B+C)</b>		<b>79</b>	<b>74</b>	<b>31</b>	<b>14</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>76</b>	<b>1</b>

\*Source: District Primary Centres Abstract, Virudhunagar District of Tamilnadu State-2011

## MEDICAL FACILITIES IN THE STUDY AREA

SJ.No	No. of Villages	Name of village	Medical Facilities (A1)/NA(2)	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
<b>0-2 km,Sivakasi Sub-District, Virudhunagar District</b>														
1	1	Edirkottai	1	0	0	1	0	0	0	0	0	0	0	0
2	2	Kangaraseval	2	0	0	0	0	0	0	0	0	0	0	0
		<b>total (A)</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2-5 km,Sivakasi Sub-District, Virudhunagar District</b>														
3	1	Kananjampatti	2	0	0	1	0	0	0	0	0	0	0	0
4	2	Alangulam (Part)	1	1	1	1	1	1	0	0	1	1	0	1
5	3	Kundayituppu	1	0	0	3	0	0	0	0	0	0	0	0
6	4	Kilammarinadu	1	0	0	1	0	0	0	0	0	0	0	0
		<b>total (B)</b>		<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>5-10 km,Sivakasi Sub-District, Virudhunagar District</b>														
7	1	Naranapuram (Part)	1	0	0	1	0	0	0	0	0	0	0	0
8	2	Anajur (Part)	1	0	0	1	1	0	0	0	0	0	0	0
9	3	Maraneri	1	0	1	1	1	1	0	0	1	1	0	1
10	4	Duraiswamipuram	1	0	0	1	0	0	0	0	0	1	0	0
11	5	Nadukkudi	1	0	0	1	0	0	0	0	0	0	0	0
12	6	Vettilaiyurani	1	0	0	1	0	0	0	0	0	0	0	0
13	7	Subramaniapuram	1	0	0	1	0	0	0	0	0	0	0	0
14	8	Salvarpatti	1	0	0	1	0	0	0	0	0	0	0	0
15	9	Vijayarangapuram	2	0	0	0	0	0	0	0	0	0	0	0
16	10	Tayiluppatti	1	0	1	1	1	1	0	0	1	1	0	1
17	11	Kongankulam	1	0	0	1	0	0	0	0	0	0	0	0
18	12	Vembakottai	1	0	0	1	1	0	0	0	0	1	0	0
19	13	Vijayakaraisakulam	1	0	0	1	0	0	0	0	0	0	0	0
20	14	Panaiyadippatti	1	0	0	1	1	0	0	0	0	0	0	0
21	15	Surarpatti	2	0	0	0	0	0	0	0	0	0	0	0
22	16	Lakshimpuram	1	0	0	1	0	0	0	0	0	0	0	0
<b>Sattur Sub-District, Virudhunagar District</b>														
23	1	Sankarapandiapuram	1	0	0	1	0	0	0	0	0	0	0	0
24	2	Thukkankurichchi	2	0	0	0	0	0	0	0	0	0	0	0
25	3	Sevalpatti	1	0	0	1	0	0	0	0	0	0	0	0
26	4	Kuganparai	2	0	0	0	0	0	0	0	0	0	0	0
		<b>total (C)</b>		<b>0</b>	<b>2</b>	<b>16</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>2</b>
		<b>Grand Total (A+B+C)</b>		<b>1</b>	<b>3</b>	<b>23</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>3</b>

\*Source: District Primary Centres Abstract, Virudhunagar District of Tamilnadu State-2011

Note : A: Available, NA- Not Available



## INFRASTRUCTURAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Tap Water-Treated	Covered Well	Hand Pump	Tube Well/Borehole	Spring	River/Canal	Tank/Pond/Lake	Post Office	Sub Post Office	Post And Telegraph Office	Telephone (landlines)	Mobile Phone Coverage	Public Bus Service	Railway Station	Commercial Bank	Cooperative Bank	Agricultural Credit Societies
<b>0-2 km, Sivakasi Sub-District, Virudhunagar District</b>																			
1	1	Edirkottai	1	1	2	2	2	2	2	2	1	2	1	1	2	2	2	1	1
2	2	Kangaraseval	1	2	1	1	1	2	2	2	1	2	1	1	2	2	2	2	2
<b>2-5 km, Sivakasi Sub-District, Virudhunagar District</b>																			
3	1	Kananjampatti	1	2	1	1	2	1	2	2	2	2	1	1	2	2	2	2	2
4	2	Alangulam (Part)	1	1	1	1	2	2	2	1	1	1	1	1	2	1	1	1	1
5	3	Kundayinoppu	1	2	2	1	2	2	2	2	1	2	1	1	2	2	2	2	1
6	4	Kilannarinadu	1	2	1	1	2	2	2	2	2	2	1	1	2	2	2	2	1
<b>5-10 km, Sivakasi Sub-District, Virudhunagar District</b>																			
7	1	Naranapuram (Part)	1	2	1	1	2	2	1	2	1	2	1	1	2	2	2	2	2
8	2	Anayur (Part)	1	1	1	1	2	2	2	2	1	2	1	1	2	2	2	1	1
9	3	Maraneri	1	1	1	1	2	2	2	2	1	2	1	1	2	2	1	2	1
10	4	Duraiswampuram	1	2	1	1	2	2	2	2	1	2	1	1	2	2	1	1	1
11	5	Nadukkudi	1	2	1	2	1	2	2	2	1	2	1	1	2	2	2	1	1
12	6	Vettilayurani	1	2	1	1	2	2	2	2	1	2	1	1	2	2	2	2	2
13	7	Subramanapuram	1	2	2	1	2	2	2	2	1	2	1	2	2	2	2	2	2
14	8	Salvarpatti	1	1	1	1	2	2	2	2	1	2	1	1	2	2	2	2	1
15	9	Vijayarangapuram	1	1	1	1	2	2	2	2	2	2	1	1	2	2	2	2	2
16	10	Taviluppatti	1	2	1	1	2	2	2	1	2	1	1	1	2	2	1	1	1
17	11	Kongankulam	1	2	1	1	2	1	2	2	2	2	1	1	2	2	2	2	1
18	12	Vembakottai	1	1	1	1	2	2	2	1	1	1	1	1	2	2	1	2	2
19	13	Vijayakaraiskulam	1	2	2	1	2	2	2	2	1	2	1	1	2	2	2	2	2
20	14	Panaiyaalippatti	1	2	1	1	2	2	2	2	1	2	1	1	2	2	2	2	2
21	15	Surarpatti	1	2	1	1	2	2	2	2	2	2	1	1	2	2	2	2	2
22	16	Lakshimpuram	1	1	1	1	2	2	2	2	1	2	1	1	2	2	2	2	1
<b>Sattur Sub-District, Virudhunagar District</b>																			
23	1	Sankarapandiapuram	1	2	2	1	2	2	1	2	1	2	1	1	2	2	2	1	2
24	2	Thilukkankurichchi	1	2	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1
25	3	Sevalpatti	1	2	1	1	2	2	2	1	1	1	1	1	2	2	2	1	1
26	4	Kuganparai	2	2	1	1	2	2	2	2	1	2	1	1	2	2	2	1	1

\*Source: District Primary Cences Abstract, Virudhunagar District of Tamilnadu State-2011

Note : A: Available, NA- Not Available  
A(1)/MA(2)

## LAND USE PATTERN IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Uncultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
<b>0-2 km,Sivakasi Sub-District, Virudhunagar District</b>													
1	1	Edirkottai	1916	0	151.39	0	1.8	8.81	9.1	1459.59	68.06	188.48	28.77
2	2	Kangaraseval	943.49	0	66.79	0	0	0	2.13	0	711.22	85.1	78.25
		<b>total (A)</b>	<b>2899.49</b>	<b>0</b>	<b>218.18</b>	<b>0</b>	<b>1.8</b>	<b>8.81</b>	<b>11.23</b>	<b>1459.59</b>	<b>779.28</b>	<b>273.58</b>	<b>107.02</b>
<b>2-5 km,Sivakasi Sub-District, Virudhunagar District</b>													
3	1	Kananjampatti	761.27	0	116	0	2.22	8	5.01	479.25	94.68	30.56	25.55
4	2	Alangulam (Part)	1491.2	0	102.14	20	3.4	38.05	5.21	944.23	157.45	196.89	23.83
5	3	Kundayiruppu	1464.07	0	225.42	0	3.09	15	2	768.64	205.16	205.59	39.17
6	4	Kilamainadu	2765	0	586.05	0	6	20	5.8	1764.53	76.3	277.7	28.62
		<b>total (B)</b>	<b>6481.54</b>	<b>0</b>	<b>1029.61</b>	<b>20</b>	<b>14.71</b>	<b>81.05</b>	<b>18.02</b>	<b>3956.65</b>	<b>533.59</b>	<b>710.74</b>	<b>117.17</b>
<b>5-10 km,Sivakasi Sub-District, Virudhunagar District</b>													
7	1	Naranapuram (Part)	307.32	0	44.57	0	0	0	0.28	0	218.1	24.9	19.47
8	2	Anaiyur (Part)	1834.27	0	265.66	0	23.43	0	24.45	1332.08	108.4	42.37	37.88
9	3	Maraneri	1936.44	0	202.97	4.31	18.41	17	15.2	1491.12	49.56	86.97	50.9
10	4	Duraiswamiapuram	2267.19	0	302.34	2.63	34.77	0	7.88	0	1559	133.35	227.22
11	5	Nadukkudi	2364.77	0	353.28	0	4.1	114.9	4.93	1071.64	273.41	373.85	188.66
12	6	Vettilayurani	1750.44	0	684.98	0	3.01	21.67	9.1	855.36	47.49	85.14	43.69
13	7	Subramaniapuram	999.49	0	38.3	30.02	0	0	332.54	120.1	400.1	44.9	33.53
14	8	Salvarpatti	1154.36	0	370	165	4.75	0	178.8	130	195.8	40.36	69.65
15	9	Vijayarangapuram	638.38	0	108.47	0	1.1	28.82	10.3	341.42	83.74	96.48	8.05
16	10	Tayilupatti	1050.22	0	93.96	0	4.37	27.22	5.58	856.95	21.02	34.23	6.89
17	11	Kongankulam	128.59	0	5.81	0	0	0.01	0.51	16.29	27.43	65.95	12.59
18	12	Vembakottai	1481.07	0	466.31	0	0	0	0	0	862.39	92.87	59.5
19	13	Vijayakaisalkulam	533.66	0	190.78	0	3	29.06	54.72	190.12	24.67	17.41	23.9
20	14	Panaiyadiappatti	1624.14	0	201.05	100.11	0	0	511.1	177.84	425.2	54.41	154.43
21	15	Surarpatti	486.8	0	75.29	0	4.7	21.1	3.04	317.57	13.25	47.85	4
22	16	Lakshimpuram	2000.71	0	200.63	85.04	1.9	39.66	3.5	1229.55	61.7	314.18	64.55
<b>Sattur Sub-District, Virudhunagar District</b>													
23	1	Sankarapandiapuram	1061.43	0	206.59	20.01	3	90.34	211	382.24	20.2	125.84	2.21
24	2	Thukkankurichi	1168.81	0	293.08	0	60	60.1	221.84	266.93	0	257.35	9.51
25	3	Sevalpatti	1163.3	0	249.2	0	0	0	719	0	0	114.9	80.2
26	4	Kuganparai	430.5	0	107.4	0	0	0	213.4	0	0	98.9	10.8
		<b>total (C)</b>	<b>24401.89</b>	<b>0</b>	<b>4460.67</b>	<b>407.12</b>	<b>166.54</b>	<b>449.88</b>	<b>2527.17</b>	<b>8779.21</b>	<b>4391.46</b>	<b>2112.21</b>	<b>1107.63</b>
		<b>Grand Total (A+B+C)</b>	<b>33742.92</b>	<b>0</b>	<b>5708.46</b>	<b>427.12</b>	<b>183.05</b>	<b>539.74</b>	<b>2556.42</b>	<b>14195.45</b>	<b>5704.33</b>	<b>3096.53</b>	<b>1331.82</b>

\*Source: District Primary Cences Abstract, Virudhunagar District of Tamilnadu State-2011



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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran
Name of the Location	:	Near Mine Lease Area
Station Code	:	A1

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	06.12.22	59.8	29.3	6.7	10.4
2	07.12.22	54.9	26.9	5.9	9.0
3	17.12.22	58.5	28.5	6.3	10.0
4	18.12.22	53.5	26.3	5.6	8.7
5	20.12.22	61.3	30.1	7.1	10.8
6	21.12.22	56.4	27.8	6.0	9.4
7	31.12.22	57.7	28.3	6.2	9.8
8	26.12.22	52.8	25.9	5.5	8.4
9	02.01.23	66.1	32.5	8.5	12.2
10	03.01.23	60.5	29.8	6.9	10.7
11	12.01.23	51.4	25.2	5.4	8.2
12	13.01.23	55.6	27.3	5.9	9.2
13	16.01.23	62.6	30.9	7.5	11.2
14	17.01.23	54.3	26.6	5.7	8.8
15	26.01.23	66.8	32.8	8.7	12.4
16	27.01.23	64.0	31.3	8.0	11.7
17	30.01.23	63.4	31.1	7.7	11.4
18	31.01.23	59.1	29.0	6.5	10.2
19	10.02.23	68.3	33.6	9.0	13.1
20	11.02.23	64.7	31.9	8.1	11.8
21	13.02.23	61.9	30.4	7.3	11.0
22	14.02.23	57.0	28.0	6.1	9.8
23	24.02.23	67.5	33.1	8.9	12.8
24	25.02.23	65.4	32.2	8.3	12.0
	MIN	51.4	25.2	5.4	8.2
	AVE	60.1	29.5	7.0	10.5
	MAX	68.3	33.6	9.0	13.1

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

*Q. P. S. J.*

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran
Name of the Location	:	Edirkottai Village
Station Code	:	A2

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	06.12.22	50.1	24.1	5.1	8.2
2	07.12.22	52.9	25.4	6.1	9.3
3	17.12.22	51.8	24.9	5.5	8.9
4	18.12.22	54.9	26.3	6.5	10.4
5	20.12.22	54.1	26.0	6.3	10
6	21.12.22	57.2	27.3	7.3	11.1
7	31.12.22	49.7	23.8	5.1	8
8	26.12.22	52.6	25.2	5.9	9.3
9	02.01.23	54.5	26.1	6.4	10.2
10	03.01.23	57.6	27.5	7.5	11.3
11	12.01.23	49.4	23.6	4.9	7.8
12	13.01.23	52.3	25.1	5.6	9.1
13	16.01.23	53.7	25.8	6.2	9.8
14	17.01.23	50.6	24.3	5.2	8.3
15	26.01.23	58.4	28.0	7.9	11.4
16	27.01.23	55.4	26.6	6.7	10.7
17	30.01.23	51.2	24.4	5.3	8.5
18	31.01.23	53.4	25.5	6.1	9.4
19	10.02.23	60.2	28.9	8.3	11.8
20	11.02.23	56.6	27.1	7.1	11
21	13.02.23	57.9	27.9	7.7	11.3
22	14.02.23	51.4	24.8	5.4	8.7
23	24.02.23	58.6	28.1	8.1	11.5
24	25.02.23	55.7	26.9	6.9	10.8
	MIN	49.4	23.6	4.9	7.8
	AVE	54.2	26.0	6.4	9.9
	MAX	60.2	28.9	8.3	11.8

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

  
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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran
Name of the Location	:	Ettakkapatti Village
Station Code	:	A3

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	08.12.22	50.3	23.5	6.6	9.4
2	09.12.22	47.9	22.4	5.3	8.3
3	15.12.22	46.7	21.9	4.9	7.9
4	16.12.22	45.3	21.2	4.3	7.1
5	22.12.22	47.0	22.0	5.0	8.0
6	23.12.22	48.3	22.6	5.4	8.4
7	29.12.22	45.8	21.4	4.5	7.3
8	30.12.22	47.6	22.3	5.2	8.2
9	04.01.23	49.7	23.3	6.1	9.0
10	05.01.23	50.6	23.8	6.9	9.7
11	11.01.23	44.4	20.8	4.0	6.8
12	12.01.23	46.4	21.8	4.7	7.8
13	18.01.23	49.4	23.1	6.0	8.9
14	19.01.23	47.4	22.2	5.1	8.1
15	25.01.23	44.6	20.9	4.1	6.9
16	26.01.23	46.1	21.6	4.6	7.7
17	01.02.23	50.9	23.9	7.1	9.9
18	02.02.23	48.8	22.8	5.5	8.7
19	08.02.23	44.9	21.0	4.2	7.0
20	09.02.23	48.5	22.7	5.4	8.5
21	15.02.23	51.4	24.1	7.2	10.1
22	16.02.23	50.0	23.4	6.3	9.1
23	22.02.23	45.5	21.3	4.4	7.2
24	23.02.23	49.1	23.0	5.7	8.8
	MIN	44.4	20.8	4.0	6.8
	AVE	47.8	22.4	5.4	8.3
	MAX	51.4	24.1	7.2	10.1

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran
Name of the Location	:	Kundayiruppu Village
Station Code	:	A4

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	08.12.22	44.6	20.9	4.5	6.9
2	09.12.22	41.8	19.6	3.6	6.1
3	15.12.22	45.7	21.4	4.9	7.2
4	16.12.22	43.7	20.5	4.3	6.7
5	22.12.22	47	22.0	5.2	7.5
6	23.12.22	42.3	19.8	3.9	6.2
7	29.12.22	46.3	21.6	5	7.3
8	30.12.22	48.5	22.6	5.5	7.9
9	04.01.23	49.4	23.1	6	8.2
10	05.01.23	43.3	20.3	4.2	6.5
11	11.01.23	41.4	19.2	3.3	6
12	12.01.23	44.3	20.8	4.4	6.8
13	18.01.23	49.8	23.3	6.2	8.3
14	19.01.23	47.4	22.2	5.3	7.7
15	25.01.23	44.7	21.1	4.6	7
16	26.01.23	42.4	19.9	4	6.3
17	01.02.23	46.6	21.8	5.1	7.4
18	02.02.23	43	20.1	4	6.4
19	08.02.23	50.6	24.0	6.9	9
20	09.02.23	48.7	22.8	5.6	8
21	15.02.23	45.4	21.3	4.7	7.1
22	16.02.23	47.9	22.4	5.4	7.8
23	22.02.23	49	22.9	5.9	8.1
24	23.02.23	50.5	23.6	6.6	8.5
	MIN	41.4	19.2	3.3	6.0
	AVE	46.0	21.6	5.0	7.3
	MAX	50.6	24.0	6.9	9.0

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran
Name of the Location	:	Kangerseval Village
Station Code	:	A5

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	10.12.22	49.1	23.3	5.0	8.1
2	11.12.22	52.5	24.9	6.4	9.9
3	13.12.22	47.7	22.6	4.5	7.6
4	14.12.22	49.6	23.5	5.2	8.3
5	24.12.22	53.3	25.3	6.8	10.5
6	25.12.22	51.5	24.4	5.9	9.3
7	27.12.22	53.0	25.1	7.2	10.3
8	28.12.22	50.9	24.0	5.6	8.9
9	06.01.23	47.8	22.8	4.7	7.7
10	07.01.23	50.4	23.9	5.4	8.5
11	09.01.23	47.3	22.3	4.3	7.5
12	10.01.23	49.4	23.4	5.1	8.2
13	20.01.23	53.6	25.5	7.2	10.7
14	21.01.23	50.7	24.0	5.5	8.7
15	23.01.23	48.9	23.2	4.9	8.0
16	24.01.23	50.0	23.8	5.3	8.4
17	03.02.23	53.9	25.5	7.4	10.9
18	04.02.23	52.0	24.6	6.2	9.7
19	06.02.23	48.5	23.0	4.9	7.9
20	07.02.23	51.1	24.2	5.7	9.1
21	17.02.23	54.4	25.8	7.6	11.1
22	18.02.23	52.7	25.0	6.5	10.1
23	20.02.23	48.3	22.9	4.7	7.8
24	21.02.23	51.8	24.6	6.0	9.5
	MIN	47.3	22.3	4.3	7.5
	AVE	50.8	24.1	5.8	9.0
	MAX	54.4	25.8	7.6	11.1

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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## WATER QUALITY DATA

**Project Name** : Rough Stone and Gravel Quarry Of Thiru. S. Ramachandran

Location Code	Location Name
W1	Near Mine Lease Area
W2	Edirkottai Village
W3	Ettakkapatti Village
W4	Kundayiruppu Village
W5	Kangerseval Village

**Location Name** :

S. No.	Parameter	Unit	W1	W 2	W 3	W 4	W 5	*Permissible Limits
1	pH	-	7.18	7.08	6.96	7.02	7.54	6.5-8.5
2	Electrical Conductivity	µmhos/cm	846	1082	1042	856.4	932.8	-
3	Odor	-	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE
4	Turbidity	NTU	<1	<1	<1	<1	<1	5.0
5	Total Hardness as CaCO <sub>3</sub>	mg/L	432	492	335	174	186	600
6	Calcium Hardness CaCO <sub>3</sub>	mg/L	255	286	204	145	156	-
7	Magnesium Hardness CaCO <sub>3</sub>	mg/L	177	206	131	29.0	30.0	-
8	Calcium Ca	mg/L	102	114	81.6	58.0	62.4	200
9	Magnesium Mg	mg/L	42.5	49.4	31.4	7.0	7.2	100
10	Alkalinity CaCO <sub>3</sub>	mg/L	112	254	190	260	582	600
11	Chloride Cl <sup>-</sup>	mg/L	205	210	215	138	106	1000
12	Sulphate SO <sub>4</sub> <sup>2-</sup>	mg/L	11.4	21.8	82.9	19.5	22.6	400
13	Iron Fe	mg/L	0.06	0.04	0.04	0.07	0.05	0.3

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# CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,  
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

S. No.	Parameter	Unit	W1	W 2	W 3	W 4	W 5	*Permissible Limits
14	Nitrate NO <sub>3</sub>	mg/L	1.86	BDL (D.L - 1.0)	2.58	BDL(D.L-1.0)	BDL(D.L-1.0)	45
15	Fluoride F	mg/L	0.44	0.58	0.52	0.48	0.45	1.5
16	Total Dissolved Solids	mg/L	510	652	630	515	562	2000
17	Free Residual Chlorine Cf	mg/L	BDL (D.L-0.2)	BDL (D.L-0.2)	BDL (D.L-0.2)	BDL (D.L-0.2)	BDL(D.L-0.2)	1.0
18	Manganese Mn	mg/L	BDL (D.L-0.05)	BDL (D.L-0.05)	BDL (D.L-0.05)	BDL (D.L-0.05)	BDL (D.L-0.05)	0.3

**Note:** \* The water quality of the collected ground water samples were found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source.

*Q. P. P. P.*

Prepared by



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17 MAR 2022

**MINING PLAN & ENVIRONMENT MANAGEMENT  
PLAN FOR ROUGH STONE, JELLY & GRAVEL**

(PREPARED UNDER RULE 19 (1) & 22 OF TNMMCR1959  
AMENDED 2015)

**MINING PLAN SUBMITTED UNDER RULE NO. 41 & 42 OF TNMMCR  
AMENDED 2015**

**For Obtaining Environmental Clearance from  
State Environmental Authority**

**PATTA LAND LEASE PERIOD FIVE YEARS**

**LOCATION OF THE AREA**

**EXTENT : 2.28.00 HECTARE**  
**S.F. No. : 672/3, 674,675/2 & 676/3**  
**VILLAGE : ETHIRKOTTAI**  
**TALUK : VEMBAKOTTAI**  
**PANCHAYATH UNION : VEMBAKOTTAI**  
**DISTRICT : VIRUDHUNAGAR**  
**STATE : TAMIL NADU**

**APPLICANT**

**S.RAMACHANDRAN, S/o. SRI. SUNDARAREDDIYAR,  
1/28, NORTH STREET, E.T. REDDIAPATTI,  
ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
VIRUDHUNAGAR DISTRICT - 626 131.**

**PREPARED BY**

**G. RAVICHANDRAN, Msc(Geo),  
RECOGNISED QUALIFIED PERSON  
REGISTRATION NO: RQP/MAS/197/2005/A**



**Shri. S. RAMACHANDRAN,  
S/o. Sri. Sundarareddiyar,**

**1/28, North Street, E.T. Reddiapatti,  
Ethirkottai post, Vembakottai Taluk,  
Virudhunagar District - 626 131.  
Mobile No. 98421 35747**



**CONSENT LETTER FROM THE APPLICANT**

The Mining Plan in respect of **ROUGH STONE, JELLY AND GRAVEL** deposit over an Extent of of 2.28.00 Hectares in S.F. Nos. 672/3(0.23.0), 674(1.20.5), 675/2(0.41.5), 676/3(0.43.0) (Patta Land) in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu state has been prepared by

Shri. G. RAVICHANDRAN,

RQP/MAS/197/2005/A

I request the District Collector Virudhunagar, State Environmental Authority to make further correspondence regarding the mining plan with the said Recognized Qualified Person in his following addresses:

Shri. G. RAVICHANDRAN

Vennila Livings, G-H, B Block,

Rettivaykkal Vayalur Road, Trichy - 620 102.

Mobile No. 8778311236

RQP/MAS/197/2005/A

Valid Up to 12/12/2025

I hereby undertake that all the modifications, if any made in the mining plan by the Recognized Qualified Person may be deemed to have made with my knowledge and shall be acceptable to me and binding on me in all respects.

Place: Virudhunagar

Signature of the Applicant

Date: .03.2021

**S.Ramachandran**

**Shri. S. RAMACHANDRAN,**  
**S/o. Sri. Sundarareddiyar,**



**1/28, North Street, E.T. Reddiapatti,**  
**Ethirkottai post, Vembakottai Taluk,**  
**Virudhunagar District - 626 131.**  
**Mobile No. 98421 35747**

**DECLARATION OF THE APPLICANT**

The Mine Plan In Respect of **ROUGH STONE, JELLY AND GRAVEL** deposit over an Extent of of 2.28.00 Hectares in S.F. Nos. 672/3(0.23.0), 674(1.20.5), 675/2(0.41.5), 676/3(0.43.0) (Patta Land) in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu state has been prepared with full consultation with me. I have understood its contents and I agree to implement the same in accordance with the Laws applicable to mines.

I am also giving further undertaking to plant the species as specified in the afforestation plan to provide Green belt to protect the environmental aspects while quarrying Rough Stone and Gravel in the Patta Land.

Place: Virudhunagar

Signature of the Applicant

Date: .03.2022

*S. Ramachandran*  
**S.Ramachandran**

This Mining is approved based on guidelines/ Instructions issued in the CGM, Letter No.3868/LC/2012 dated 19-11-2012 and incorporation of the particulars specified in the letter No. KV.1/664/2022  
Dated...17/03/2022... of S. *Assistant* Director of Geology and Mining and subject to further Fulfillment of the conditions laid down under rule 41,42 of Tamil Nadu Mines and Minerals (Consolidation) Rules 1959

*[Signature]*  
Assistant Director of Geology & Mining  
Virudhunagar

This Mining Plan is approved Subject to the conditions / Stipulation Indicated in the Mining Plan Approval

*[Signature]*  
Letter Roc. No. KV.1/664/2022 Dated 17/03/2022

*[Signature]*

**Shri. G. RAVICHANDRAN, Msc(Geo),**  
**Recognised Qualified Person**  
**Reg. No. RQP/MAS/197/2005/A**

**Vennila Livings, G-H, B Block,**  
**Rettivaykkal Vayalur Road,**  
**Trichy - 620 102.**  
**Mobile No. 8778311236**



**CERTIFICATE FROM THE RECOGNISED QUALIFIED PERSON**

This is to certify that the provisions of the Mines Act, Metalliferous Mines Rules and Regulations, Miner Mineral Conservation and Development Rules, 2010 & Minerals Amended Rules of Tamilnadu Minor Mineral Concession Rule 1959 etc, made there under have been observed in the preparation of Mining Plan for **ROUGH STONE, JELLY AND GRAVEL** deposit over an Extent of 2.28.00 Hectares in S.F. Nos. 672/3(0.23.0), 674(1.20.5), 675/2(0.41.5), 676/3(0.43.0) (Patta Land) in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu state.


**THIRU. .S. RAMACHANDRAN, S/o. SRI. SUNDARAREDDIYAR,**  
**1/28,NORTH STREET, E.T. REDDIAPATTI,**  
**ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,**  
**VIRUDHUNAGAR DISTRICT – 626 131.**

Wherever Specific permission are required , the applicant will approach the concerned authorities of state Government and State Environmental Authority officers, for such permission, approvals, exemption or relaxation Standards prescribed by Rules and regulations in respect of miners health and the rules will be strictly implemented.

It is also certified that the information furnished in the mining plan is true and correct to the best of my knowledge.

Place: Trichy – 620 102

Date: .03.2022

  
**G. RAVICHANDRAN**  
**G.RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
**MINING GEOLOGIST**  
**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**



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(X) S. Hanthi:



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**MINING PLAN INCLUDING  
ENVIRONMENT MANAGEMENT PLAN FOR  
ROUGH STONE /JELLY / GRAVEL QUARRY**

**Over an Extent of 2.28.00 Hectares in S.F. Nos. 672/3, 674,  
675/2 & 676/3 (Patta Land) in Ethirkottai Village,  
Vembakottai Taluk, Virudhunagar District, Tamilnadu**

**INTRODUCTION**

Extracting minor minerals from an area of less than 5 hectares will need environment clearance from the Union ministry of environment and forest (MOEF). The EIA (Environmental Impact Assessment) notification 2006, requires mining projects, including new projects, expansion, modernization, or renewal of mine leases, with lease area of 5 hectare and above irrespective of major or minor mineral of obtain prior environment clearance. Mining projects with lease area of 5 hectares and above but less than 50 hectares are categorized as category 'B' whereas projects with lease area of 50 hectares and above are categorized as category 'A'. The category 'A' projects are to be given clearance by MOEF while category 'B' projects are considered by the respective state-level EIA authority.

The mining plan has been prepared towards the order of Supreme Court of India 27 February, 2012, based on the Supreme court order, Tamilnadu Government , Secretary, Industry Department (NCI) as issued order vide G.O.Ms.No.79 dated 06.04.2015. In this order Tamilnadu Minor Mineral Concession Rule 1959 as amended rule 41 & 42 as the approved mining plan is required to the grant of mining lease and the lessee of existing quarry which has already granted with quarry lease should also obtain environmental clearance from SEIAA, Tamilnadu.

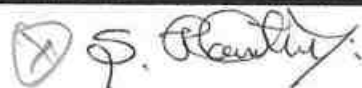
The approved mining plan has to be obtained prior environment clearance by the committee formed recently by the SEIAA. The government of tamilnadu has formed one committee headed by the chairmen of SEIAA and the nominated members from each department as members. The environment clearance has to be issued by the SEIAA to grant of quarry lease and this mining plan is submitted based on the above orders to obtain environment clearance from SEIAA Tamilnadu committee.

The applicant, Thiru. S. Ramachandran, S/o. Sri. Sundarareddiyar, D.No. 71/28, North street, E.T. Reddiapatti, Ethirkottai post, Vembakottai Taluk, Virudhunagar District - 626131 as an individual having good experience and skill on quarrying of Rough Stone, Jelly and Gravel. He has applied for Renewal grant of Quarry lease to the state government over an extent 2-28.00 Hectares in S.F. Nos. 672/3, 674, 675/2 & 676/3 (Patta Land) in Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu.

### 1. General Information

- a) Name of the applicant : THIRU. S. RAMACHANDRAN
- b) Address of the Applicant : THIRU. S. RAMACHANDRAN,  
S/o. SUNDARAREDDIYAR,  
1/28, NORTH STREET,  
E.T. REDDIAPATTI,  
ETHIRKOTTAI POST,  
VEMBAKOTTAI TALUK,  
VIRUDHUNAGAR DISTRICT. - 626131.
- c) Mobile No. : 98421 35747
- d) Status of the applicant : Private Individual
- e) Mineral which the applicant Intends to mine : Rough Stone, Jelly and Gravel
- f) Precise area communication letter details received from the competent authority of Government : KV 1/664/2021-KANIMUM  
Dated : 11.02.2022
- g) Period of Permission / lease to be granted : 05 Years.
- h) Name and address of the RQP /Authorised person preparing the Mining plan : G. Ravichandran, Msc(Geo),  
Vennila Livings, G-H B Block  
Rettaivayakkal Vayalur Road,  
Trichy - 620 102.  
Mobile No. 87783 11236

Registration No : RQP/MAS/197/2005/A

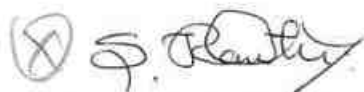




## 2. LOCATION

STATE	DISTRICT	PANCHAYAT H UNION	TALUK	VILLAGE	S.F.Nos.	EXTENT (Hectares)
Tamil nadu	Virudhunagar	Vembakottai	Vemba kottai	Ethirkottai	672/3, 674, 675/2 & 676/3 (Patta Land)	2.28.00 Hect

- b) Classification of the area : Patta Lands
- c) Ownership / Occupancy of the applied area: Patta lands  
(Surface right)
- d) Toposheet No. : 58-G/11
- Latitude : 9° 21' 49.3"N to 9° 21' 54.7"N
- Longitude : 77° 44' 23.1"E to 77° 44' 28.0"E
- e) Existence of public road / Railway line, : The area applied for quarry lease lies south side of Sattur-Ethirkottai main road and 1.5km from Ettakapatti as shown in the ROUTE MAP (Plate No.1A).. The nearest Rail Head is at Sivakasi at a distance of 13km. The nearest airport is at Thoothukudi in 95Km distance.
- f) Previous Lease Deed details : Collector's Proceeding No. KV1/2214/03 Dated: 03-10-2003-5years from 03-11-2003 to 02-11-2008





## Part-A

### **3. GEOLOGY AND MINEABLE RESERVES**

#### **3.1 Topography and general Geology**

The area applied for mining lease is a gentle plain terrain. The area applied for quarry lease is dry lands without any vegetation and the old pits are noted 60m length, 46m width and 6m depth. The gravel having a thickness of 3m and weathered rock formation is having thickness of 2meter below the gravel.

The rocks in this area belonging to ARCHEAN group of rocks. Below the Gravel formation a hard Rough stone Charnockite are noted. The rocks are Phaneric to medium grained nature. And in these rocks there are mineral constituents of BLUE QUARTS, MICRO CLINE FELDSPAR, HYPERSTHENE and flacks of BIOTITE MICA. The rocks are striking towards North - South direction dipping 80° Vertical towards East-West direction. The strike length of the deposit is 66m with an average width of 136meter on southern side, the strike length of the deposit is 46m with an average width of 76meter on middle side and the strike length of the deposit is 76m with an average width of 136meter on northern side.

#### **3.2 DETAILS OF EXPLORATION**

As noted in the nearby working quarries and wells in the radius of 500m, the gravel having a thickness of 3m and weathered rock occurs to a thickness of 2m below gravel. Below 5m Charnockite (Rough stone) is noted.

#### **3.3 ESTIMATION OF RESERVES.**

Reserves have been calculated based on the cross section method. The strike length of the deposit is 66m with an average width of 136meter on southern side, the strike length of the deposit is 46m with an average width of 76meter on middle side and the strike length of the deposit is 76m with an average width of 136meter on northern side.

Based on the above data geological reserves and mineable reserves has been calculated for a depth of 25 meter. The reserves have been computed for depth of 0 to 3m in gravel is calculated to a depth of 3 to 5meter in weathered rock and from 5 to 25meter in Rough stone. The details of reserves are shown in annexure I and in Geological Plan & Section Plate No IV.

SL NO	TYPE OF RESERVES	Gravel + Weathered rock + Rough stone Cub.m
1	Geological reserves	5,53,640
2	Mineable reserves	3,17,300
3	Bench locked & 7.5m boundary barrier reserves	2,36,340

S. Ravi

#### 4. MINING

The area is working by Semi-Mechanised open cast method. The bench height of the quarry is maintained to the height of boom of the machine used for digging and excavation. In the area applied for ML a boundary barrier of 7.5 meters has been left on all direction and a safety distance of 10m on Cart track.

During first year the mining operation will be commenced from the Southern side of the applied lease area(Section on PQ-AB) to a strike length of 58m, width 121m. The gravel & weathered rock formation will be removed up to 5m and below 5m depth one bench will be made to achieve the planned production quantity. During second year the quarry advancement will be made towards Northern side of middle portion (Section on PQ-CD) for a strike length of 46m, width 61m from south to north. The gravel & weathered rock formation will be removed up to 5m and below 5m depth three benches will be made to achieve the planned production quantity. During third year the quarry advancement will be made further movement of north direction on northern side (Section on PQ-EF) make 5m depth on gravel and weathered rock formation and below 5m depth one bench will be made to achieve the planned production quantity.

During fourth & fifth year workings the quarry advancement will be made below the working area of the first three year workings make 3benches of each 5m depth on roughstone to be made the planned production quantity.

At the end of fifth year the mine will be having a depth of 25m with 4 benches in rough stone and 5m depth in weathered rock and gravel. During every year working the bench with will be maintained more than the height of the bench with a bench slope of 60° for safe reversal and working of machinery and movement of trucks.

During 5 years working the following quantity of rough stone, gravel will be removed and the details are given below.

#### YEAR WISE PRODUCTION SCHEDULE

YEAR	GRAVEL IN CU.M	WEATHERED ROCK IN CU.M	ROUGHSTONE IN CU.M
I	21054	14036	29415
II	8418	5612	52530
III	17424	11616	37740
IV	----	----	63035
V	----	----	56420
Total	46,896	31,264	2,39,140

#### **Machineries used**

The blasted ROM will be excavated by TATA HITACHI EX200. For drilling tractor mounted compressor of 175 cfm will be used matching with jackhammers. For drilling two Tc drill rods of 32 mm dia and also Wagon drill hole of size 100mm dia will be used and the drill rod depends upon the depth of 4m to 6m drilling. Normally drill rods of .9m length and 1.5m length will be used in the quarry. For transportation 10 tons tippers will be used for transporting ROM and reject from the quarry. The ground water table in this area is ranging from 40 to 45 meter. A diesel pump will be kept for dewatering rain water during rainy season. For manual production the labours will be provided with pick Axe, Spaded, crowbar, iron basket and hammer.

(X) S. Rauty.

## DETAILS OF MACHINERIES TO BE USED IN QUARRY

Sl. NO	NAME OF THE EQUIPMENT	CAPACITY	REQUIRED
1	Excavator	TATA HITACHI EX200	1
2	Tipper	10 Tonnes	6
3	Tractor compressor for drilling	175 CFM	2
4	Dewatering pump	5 Hp Diesel pump	1

## MARKETING OF ROUGH STONE AND GRAVEL

The boulders will be marketed to the nearby crushers for producing crusher aggregates. The Gravel, Weathered rock & reject hard boulders will be marketed to filling and foundation works for construction works. The crusher aggregate will be marketed to nearby areas,

## CONCEPTUAL MINING PLAN

Conceptual mining plan is prepared in a scale of 1:2000 in an object of long-term systematic development of bench layouts. In addition to consider the above factors, to avoid rehandling, setting roads, to determine ultimate pit limit depth of mining and ultimate pit slope, selection of sites for construction of infrastructures etc.,

### Ultimate pit limit dimension:

The ultimate pit size is designed based on certain practical factor such as the economical depth of mining safety zones permissible area etc. The ultimate pit of the mine is given as under

SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)
PQ - AB	58	121	25
PQ - CD	46	61	25
PQ - EF	68	121	25

However during extraction of ROM bench will be 5m height with a slope of 60° for proper quarrying.

The Gravel & weathered formation will be marketed. After quarrying the mined out area will be used as water reservoir for making artificial recharge factor to the nearby areas.

The Conceptual Plan and Sections is shown in Plate No. VI. The mineable reserves calculated for a depth of 25meter a total Roughstone of 2,39,140m<sup>3</sup>, Weathered rock 46,896m<sup>3</sup> & Gravel 31,264m<sup>3</sup>. Based on an average production of maximum quantity of 60,000 m<sup>3</sup> to 65,000 m<sup>3</sup>/year. The life of the mine will be 3,17,300/60,000 m<sup>3</sup> = 5 years. The available reserve below 25m can be mined in the next quarry renewal period after 5 years. The next five years period more quantity of Rough stone can be quarried. Since the entire Gravel and weathered rock which occurs to a depth of 0 to 5meter is planned for excavation during the present five year working.

## 5. BLASTING

### 5.1 BLASTING PATTERN

The massive formation shall be broken in to pieces of portable size by drilling and blasting using jack hammers and shot holes blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 1.8 to 2.0 per cub.m. Explosives. Blasting parameter proposed to be adopted for shot holes shall be

(X) S. Senthil

Spacing of 0.9 m, burden 0.60m and depth 1.5m  
 Output per hole = 0.9 m X 0.60m X 1.5m = 0.810 cub.m  
 Output per hole will be 0.810 cub.m with 90% blasting efficiency  
 Quantity of explosive required to blast one hole with a powder factor of 1.8  
 Explosive required will be .810 / 1.8 = 0.450 kg per hole  
 In the above quantity booster Cap sensitive explosives will be one third 0.150 kg per hole  
 Daily conception of explosive will depend upon the number of shot holes drilled.



## 5.2 TYPES OF EXPLOSIVES

Following explosives are recommended for efficient blasting with safe practice

Sl.No	Description	Class/ Division	Type	Size
1	Slurry Explosive	Class - 3	Nitro compound mixer	25mm X 0.125 kg
2	Delay Detonators	Class - 6	Ordinary and elect. (OD & ED)	Standard size of IDL
3	Safety Fuse	Class - 6 Div - 1	Blue sump fuse coil of 10 meter each	

## 5.3 MEASURES PROPOSED TO MINIMISE GROUND VIBRATION DUE TO BLASTING

There are no villages near by the area applied for mining lease. To control ground vibration delay electric detonator will be used.

## 5.4 STORAGES AND SAFETY MEASURES

The proposal rate of production is about 211m<sup>3</sup> or 52loads / day of 10tonnes capacity of ROM boulder in one day with average working days of 25 in a month.

The applicant has made an agreement with explosive M/S Sri Balan Explosives, 7, Gomathy nagar 1<sup>st</sup> street, Sankarankovil, Tenkasi District-627 756 who is having explosive licence bearing no: E/SC/TN/22/552 (E63073) received from chief controller of explosive, Chennai. The owner of the Firm made agreement with Sri. S.Ramachandran to make necessary safety practice to blast in his licence and supply of explosives will be made in Form22 as specified by Indian Explosives Act 1884. (Annexure- XI)

After blasting no explosives will be kept in the mine area and the unused explosives will be taken up by the explosive dealer. Before blasting the explosives will be carried by the dealer in his own explosive van and the unused quantity will be returned to the explosive van for keeping the explosive in his Magazine. Before blasting men and animals will be cleared in a surrounding distance of 500m and three sirens will be made before blast and after completing blasting a long siren will be given. Safety guards with red flags will be posted on all the four side direction.

## 6. MINE DRAINAGE

From the local enquire the ground water table in this area is ranging from 40 to 45m. The open dug wells are noted around the applied lease area. The wells are having a depth ranging from 14 to 16m and the wells are dry. There are also no joints or fractures in the hard rock. The area attains rain fall during northeast monsoon. Hence there will be no adverse effect by the mining to the nearby areas.

(X) S. R. Ravi



Sl. No.	Details	Direction	Distance (m)	Depth(m)	Water level
1.	well	north	480	16	Dry
2.	well	north	320	14	Dry
3.	seasonalodai	west	300	1.8	Dry
4.	well	west	340	14	Dry
5.	well	west	360	16	Dry
6.	well	south	270	15	Dry
7.	seasonalodai	south	260	0.75	Dry
8.	well	east	280	14	Dry

### 7. OTHER PERMANENT STRUCTURES

There is no hospital or Primary school, village temples and primary health centres within 500m radius of the quarry. There is no river, lake nearby this area. There are also no historical monuments nearby this area. There are also no worship places, reserve forest, social forest, and wild life sanctuaries near this area. The water bodies are dry in all the season.

SL. NO	DIRECTION	VILLAGE	HABITATION	DISTANCE
1	North	Ettakapatti	80	1.5 km
2	South	K. Lakshmipuram	90	1.25 km
3	East	Madathupatti	300	4km
4	West	Ethirkottai	600	3km

### Nearest infrastructures

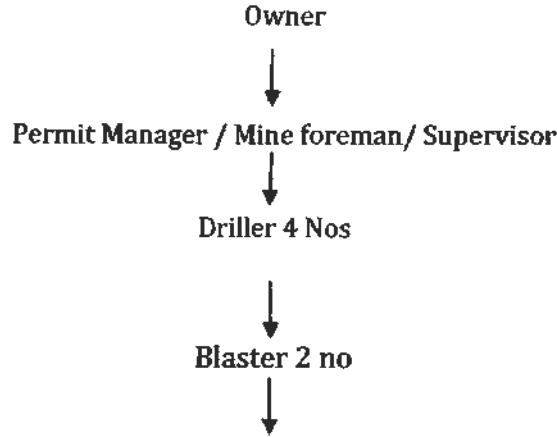
Sl. No	Name of infrastructure	Name of village	Distance from area applied for M.L
1	Post office	Ethirkottai	6Km
2	Police station	Alangulam	13Km
3	Town	Sivakasi	13Km
4	DSP office	Sattur	21Km
5	Register office	Rajakularaman	30Km
6	Hospital	Sivakasi	13Km
7	School	Nallammanayakanpatti	3.5Km
8	Railway station	Sivakasi	13Km
9	Airport	Madurai	80km
10	Sea Port	Thoothukudi	95km

(X) S. Rauty



## 8. EMPLOYMENT POTENTIAL & WELFARE MEASURES

### ORGANISATION CHART



Unskilled persons for segregation loading of boulders and helpers 10 nos

The workers will be provided with drinking water facility, sanitation facility in the proposed office building. A bore well will be drilled near the office building.

First aid and labour health facility will be arranged from the nearby hospital at Sivakasi. All safety equipments will be provided for the persons employed in the mine. The supervisor will be provided with mobile phone to contact the owner or any officials during emergency time.

### SAFETY AND SOCIAL SECURITY MEASURES

Safety equipments to be provided for the persons employed in the mines.

1. Safety helmet approved by Director General of mines Safety
2. Nose Mask
3. Ear Plug for machine operators and drillers
4. Safety shoes as specified by Director General of Mines Safety
5. Safety Goggles for drillers
6. Safety Belt and safety rope approved by Director General Mines of Safety - for labourers, working in the mine for removing danger over hang and undercut boulders. Employment of child labour will be strictly prohibited in the mines. All persons employed in the mines will be provided with Group Insurance System from a Govt. Recognised insurance Agency.

The applicant has given Notary Affidavit for Non employment of child labour directly or indirectly while operating the mine. The Affidavit is enclosed in Annexure.

(X) S. Pandey

## PART - B



### 9. ENVIRONMENT MANAGEMENT PLAN

#### 9.1 Existing land use pattern

The area applied for mining lease is a gentle plain terrain and having dry lands with no. vegetation available nearby this area. From the study of the nearby well the ground water table is ranging from 40 to 45m.

The area will obtain rain fall during NE monsoon in summer the climate will be very hot and the temp will be up to 90°

#### Present land use planning (break up along with green belt etc).-

S.No.	Land Use Category	At the end of life of mine
1.	Mining \Excavation	1-80.0 hectares
2.	Storage of Top Soil	0.00.0 hectares
3.	Sorting and Mineral Dressing Yard	0.00.0 hectares
4.	Infrastructure & Road	0.05.0 hectares
5.	Afforestation(Greenbelt& Plantation)	0-36.0 hectares
6.	Rain Water Storage	1-80.0 - (After closure of mine)
7.	Undisturbed Area	0.05.5 hectares
8.	Fencing	0.07.0 hectares
	<b>TOTAL</b>	<b>2.28.0 hectares</b>

The area applied for mining lease is a plain terrain and having dry lands. The patta land is used for quarrying Rough Stone blue metal. Infra structure will be provided in the patta land. First aid, sanitation facilities is also provided in the office building. The Patta Land with Surface right.

#### 9.2 Water regime:

Ground water occurrence in this area is 40 to 45m depth. The quarrying is restricted up to 25m below Ground Level. Hence the quarry operation will not be affected by the ground water.

#### 9.3 Flora and Funna:

There are no trees observed in the area. Thorny bushes, neem and palm are found in around the area, No plants of botanical interest or animals of zoological interest are noticed. There is no cultivation, plantation or agriculture found within the vicinity of the area.

(X) S. Hanthi



#### 9.4 Climatic condition

The area receives rainfall of about 850/per annum and the rainy season is mainly from Oct - Jan during North East monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

#### 9.5 Human settlement

There is no hospital or Primary school, villages, temples and primary health centres within 500m radius of the quarry. There is no river, lake nearby this area. There are also no historical monuments nearby this area. There are also no worship places, reserve forest, social forest, and wild life sanctuaries near this area. The water bodies are dry in all the season.

SL. NO	DIRECTION	VILLAGE	HABITATION	DISTANCE
1	North	Ettakapatti	80	1.5 km
2	South	K. Lakshmipuram	90	1.25 km
3	East	Madathupatti	300	4km
4	West	Ethirkottai	600	3km

Basic human welfare Amenities such as Health centre, schools, communication facilities, and commercial centres etc., are available at Sivakasi located at a distance of 13Km on the northern side of the area.

#### 9.6 Plan for Air, Dust suppression

The air quality will be affected by the Suspended Particle Matter (SPM) generated by the blasting, Jack hammer drilling, Loading and unloading during the Roughstone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed around the quarry to trap the dust.
- Avoiding spillages during the transportation.

#### AMBIENT AIR QUALITY (AAQ):

The ambient air quality depends upon the emission sources, meteorological conditions and the background concentration of specific contaminants. The principal objective of the Ambient Air Quality Monitoring (AAQM) is to assess the existing levels of ambient air quality in and around the lease area for assessing the impact on air quality due to future mining activity in the region.

With the above objective, the following parameters were analyzed at the sampling locations established in the study area.

(X) S. Handley

- ❖ Particulate Matter (PM<sub>10</sub>)
- ❖ Particulate Matter (PM<sub>2.5</sub>)
- ❖ Sulphur Dioxide
- ❖ Oxides of Nitrogen
- ❖ Carbon Monoxide



#### DESIGN CRITERIA FOR AMBIENT AIR QUALITY MONITORING STUDY NETWORK:

Ambient Air quality has been assessed through a net-work of 3 ambient air quality stations. The following methodology has been considered for design of ambient air quality monitoring network in the area.

- ❖ Topography / terrain of study area.
- ❖ Populated areas within study area
- ❖ Residential /sensitive areas within study area
- ❖ Predominant wind direction and wind pattern

#### 9.7 Plan for noise level control:

Shallow holes of 32mm diameter and 1.5m depth will be drilled and to control ground vibration conventional low power explosives such as slurry explosives, delay electric detonator will be used for rough stone. Hence ground vibration and noise pollution will be minimal and restricted within the quarry workings. There are no villages near by the area applied for mining lease.

The drivers will be strictly inducted to move the vehicle during the transportation not exceed 40km per hour. Sentries with flags & whistle will posted in village junction and populated area to control and regulate traffic.

#### 9.8 Environment impact assessment statement

The mining plan proposed is for a production of Roughstone with involving deep hole drilling and heavy blasting permission as per MMR1961 Regulation 106 (2b) against Director General of Mines Safety, Chennai Region. Such limited mining activity is not likely to cause any impact adversely on environment as for as pollution of air, water and noise is concentrated, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF. It is B2 category mine. For the average production of 60,000 m<sup>3</sup> to 65,000 m<sup>3</sup>/year is planned. Besides **two working Quarries** and No villages in the surrounding radius of 500 metres.

(X) S. Rauty



**Details of quarries around 500m radius of proposed quarry**

Quarries	S.no	Name	Village	s.f.nos.	Extent,Ha	Distance
Existing working	1.	T.Kannan	Ethirkottai	640/2,642/3B,644	1-88.0	400m
	2.	S.Ramachandran	Ethirkottai	649/1,3,688,etc.,	3-94.5	100m
Abandoned	3.	T.Ragavan	Kankarseval	310,311/2	1-65.5	375m
Present proposed	4.	S.Ramachandran	Ethirkottai	672/3,674,675etc.,	2-28.0	400m
	5.	T.K. Bharath	Ethirkottai	650,651/1.etc.,	3-65.5	100m
	6.	Govt. Poramboke	Ethirkottai	648	1-30.5	
Total extent in Hectares					14-45.0	

To avoid environmental pollution during transport of Charnockite (Roughstone) to various destinations the loaded truck will maintain a speed of 40 km / hour. The loaded truck will be covered with tarpaulin cover to avoid dust generation during vehicle movement on the roads. Hence there will not be any environment impact to the mining area are to the nearby villagers.

**9.9 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing)**

In the proposed mining plan only a maximum depth of 25m has been envisaged as workable depth for safe & economic mining during the lease period. Hence after quarry reaches ultimate pit limit (for this lease period of 25m depth) fencing will be constructed around the quarries pits to prevent inherent entry of the public and cattle. There is no proposal for reclamation and rehabilitation.

**9.10 Proposal of Afforestation**

The proposal of afforestation and land use is shown in Plate No: VI & VIII. The detail of proposed afforestation is given below.

Plantation	Type	No. of Trees	Spacing	Area (Hectares)	Survival
I YEAR	Neem	20	6m x 6m	0-07.2	80%
II YEAR	Neem	20	6m x 6m	0-07.2	80%
III YEAR	Neem	20	6m x 6m	0-07.2	80%
IV YEAR	Neem	20	6m x 6m	0-07.2	80%
V YEAR	Neem	20	6m x 6m	0-07.2	80%
<b>TOTAL</b>		<b>100</b>		<b>0-36.0 Ha</b>	

The applicant will arrange for watering the plants for effective survival of the plant. The afforestation will be properly monitored by the persons employed in the mines. The applicant has also given Notary Affidavit to make afforestation as specified with mining plan to make the area as green belt and to protect the environment.

S. Stanley

### 9.11 Proposal for water management

	DETAILS	SOURCE	PROVISION QUANTITY/DAY
A	Drinking water	A bore well will be drilled near the office area for providing drinking water	1.000KLD
B	Dust Suppression-water sprinkling	Water tanker on hired basis	1.300 KLD
C	Green belt	From the water tanker and the bore well	0.600 KLD
D	Domestic	Water storage in tub near working area	0.300 KLD
		<b>TOTAL</b>	<b>3.200KLD</b>

### 9.12 Proposed financial estimate/ budget for (EMP) environment management :

#### A. FIXED COST:-

Sl. No	DETAILS	COST in RS.
i)	Land Cost	Own patta land
ii)	Labourers Shed	50,000 onetime expense
iii)	Fencing	50,000 onetime expense
iv)	First aid room and accessories	25,000 onetime expense
v)	Sanitary facility	25,000 onetime expense
	<b>Total =</b>	<b>Rs. 1,50,000</b>

#### B. OPERATIONAL COST:-

#### PRODUCTION COST / UNIT OF BOULDER PRODUCTION. (One Unit =2.83m<sup>3</sup>)

#### Working cost for production of boulders (machineries Hired basis)

Seignior age fee per unit for transport permit to be paid to state government for rough stone is Rs. 167Per unit and gravel & weathered rock removal by purchasers JCB compo with Tipper and seignior age fee amount to be paid Rs.26/m<sup>3</sup> at the time of marketing will be paid by Purchaser only.

#### Machinery to be used

- a) **Excavator** The excavators of 0.90cu.m. Bucket capacity and tippers of 10/20Ts capacity will be used. The quantity of Diesel consumption is based on the working hours of Excavators (Filling Factor and Loading Cycling), in the open cast quarry project Excavators are proposed to quarry.

Total Number of Excavator used for quarrying = 1No.

Total Excavator Running hours for the project

One Excavator will be excavate = 60Cu.m. / Hr.



7 MAR 2022

**Five Year Project = Roughstone = 2,39,140 cu.m / 60 cu.m = 3,986 Excavator Hours.**  
**Average Diesel Consumption Tata Hitachi (Model EX-110-150) = 9 Ltr/Hr**  
**Diesel Price around = Rs.90 (At present scenario)**  
**Hence 3986 Hours x 9 Ltrs/Hr = 35,874 Ltrs of HSD will be utilized for the project.**  
**The Hired Vehicle charges per hour inclusive of diesel around Rupees 1000/Hour**  
**Total operational cost = 3986 Ex.Hours x Rs. 1000 = Rs.39,86,000**

**b) Compressor with Drilling machine**

**Total Number of Compressor with Drilling Machine used for quarrying = 1 No.**  
**Total Compressor with Drilling Machine Running hours for the project**  
**One Compressor with Drilling Machine will be Drilling = 100 Cu.m. / Hr.**

**Five year project Roughstone = 2,39,140 cu.m / 100 cu.m = 2,391 Running Hours.**  
**Average Diesel Consumption = 8 Ltr/Hr**  
**Diesel Price around = Rs.90 (At present scenario)**  
**Hence 2391 Hours x 8 Ltrs/Hr = 19,128 Ltrs of HSD will be utilized for the project.**  
**The Hired Vehicle charges per hour inclusive of diesel around Rupees 750/Hour**  
**Total operational cost = 2391 Hours x Rs. 750 = Rs.17,93,250**

**c) Explosives used**

**First Five Year project Explosives- Charging and Blasting used for Rs.700/100 Cu.m.**  
**Total drilling material for quarrying = Roughstone = 2,39,140 cu.m.**  
**Total cost for first Five year Roughstone**  
**= (2,39,140 cu.m / 100 cu.m) x Rs. 700 = Rs.16,73,980**

**Total operational cost = (a)+(b)+(c)**

**= Rs.3986000 + 1793250 + 1673980 = Rs.74,53,230**

**Total HSD required for the Project Life = (a)+(b) = 35874 + 19128 = 55,002 Ltrs**

**C. EMP COST:-**

**Budget Provision for the Entire quarrying period:**

1.	Air quality sampling	Rs. 10,000
2.	Water quality sampling	Rs. 10,000
3.	Noise monitoring	Rs. 10,000
4.	Ground Vibration test	Rs. 10,000
5.	Drinking water facility	Rs. 20,000
6.	Sanitary arrangement	Rs. 15,000
7.	Safety Kids	Rs. 10,000
8.	Water sprinkling	Rs. 20,000
9.	Afforestation	Rs. 20,000
	<b>Total</b>	<b>Rs.1,25,000</b>

**The total amount will be equally distributor for water supplying towards drinking water, domestic use, and water sprinkling for dust suppression and for afforestation programme.**

*(Signature)*

<b>A. Fixed Cost</b>	<b>= Rs. 1,50,000</b>
<b>B. Operational Cost</b>	<b>= Rs. 74,53,230</b>
<b>C. Emp Cost</b>	<b>= Rs. 1,25,000</b>

**Total Project cost(A+B+C) = Rs. 77,28,230**



**i) CER Cost 2.0% of the project cost.**

The CER Cost to the nearby areas will be about Rs. 1,55,000 for the 5 year project.

**10. MINE CLOSURE PLAN**

- a. The mined out area will be suitably fenced to avoid inadvertent entry of men and animal to the quarry area.
- b. After closure of mine the applicant will adhered the rules and regulations governed by state and central government
- c. All safety measures and mitigations will be maintained properly in the mined out area. Security persons will be engaged in all three shifts to ensure safety in the quarry.

The progressive mine closure plan is enclosed in Plate No. VIII.

**11. ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT**

- (i) Permission will be obtained from the District Mines Office to extract the Rough Stone from the Boundary barriers and for slopes.
- (ii) Care and precautionary measures will be taken for the safety of workers as per Mines Rules-1955 and Mines Acts-1952.
- (iii) The applicant will endeavor every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.
- (iv) Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

PLACE: TRICHY

DATE: .03.2022

*[Signature]*  
 ASSISTANT DIRECTOR  
 GEOLOGY AND MINING  
 VIRUDHUNAGAR DISTRICT  
 VIRUDHUNAGAR

*[Signature]*  
 SIVAKANDHARAN, P.G.D.MEN,  
 MINING GEOLOGIST  
 RQP / MAS / 197 / 2005 (A)  
 VALID UPTO: 12.12.2025

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# ANNEXURE- I



## GEOLOGICAL RESERVES

MINERAL	SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)	VOLUME IN CUM	TOTAL VOLUME IN CUM
GRAVEL	PQ - AB	66	136	3.0	26928	68,424
	PQ - CD	46	76	3.0	10488	
	PQ - EF	76	136	3.0	31008	
WEATHERED ROCK	PQ - AB	66	136	2.0	17952	45,616
	PQ - CD	46	76	2.0	6992	
	PQ - EF	76	136	2.0	20672	
ROUGH STONE	PQ - AB	66	136	20.0	179520	4,56,160
	PQ - CD	46	76	20.0	69920	
	PQ - EF	76	136	20.0	206720	
Total Geological Reserves quantity in Cu.m.						5,70,200
Deduct Old pit quantity ( Inside the applied area) = 60m x 40m x 6m						-16,560
<b>TOTAL GEOLOGICAL RESERVES</b>						<b>5,53,640 Cu.M.</b>

## MINEABLE RESERVES

MINERAL	SECTION	BENCH	LENGTH (M)	WIDTH (M)	DEPTH (M)	VOLUME IN CUM	MINEABLE RESERVES IN CUM
GRAVEL	PQ - AB	I	58	121	3.0	21054	46,896
	PQ - CD	I	46	61	3.0	8418	
	PQ - EF	I	48	121	3.0	17424	
WEATHERED ROCK	PQ - AB	I	58	121	2.0	14036	31,264
	PQ - CD	I	46	61	2.0	5612	
	PQ - EF	I	48	121	2.0	11616	
ROUGH STONE	PQ - AB	II	53	111	5.0	29415	2,39,140
	PQ - AB	III	48	101	5.0	24240	
	PQ - AB	IV	43	91	5.0	19565	
	PQ - AB	V	38	81	5.0	15390	
	PQ - CD	II	46	51	5.0	11730	
	PQ - CD	III	46	41	5.0	9430	
	PQ - CD	IV	46	31	5.0	7130	
	PQ - CD	V	46	21	5.0	4830	
	PQ - EF	II	68	111	5.0	37740	
	PQ - EF	III	63	101	5.0	31815	
	PQ - EF	IV	58	91	5.0	26390	
	PQ - EF	V	53	81	5.0	21465	
<b>TOTAL MINEABLE RESERVES</b>							<b>3.17,300Cu.M.</b>

S. Senthil

**G.RAVICHANDRAN, M.S., PGD.MER.,**  
**MINING GEOLOGIST**  
**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**

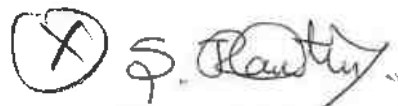
## ANNEXURE - II



### PRODUCTION SCHEDULE FOR 5 YEARS PERIOD

YEAR	SECTION	BENCH	LENGTH (M)	WIDTH (M)	DEPTH (M)	VOLUME IN CUM			TOTAL PRODUCTION IN CU.M.
						GRAVEL	WEATHERED ROCK	ROUGH STONE	
<b>I</b>	PQ-AB	I	58	121	3.0	21054	----	----	<b>64,505</b>
	PQ-AB	I	58	121	2.0	----	14036	----	
	PQ-AB	II	53	111	5.0	----	----	29415	
<b>II</b>	PQ-CD	I	46	61	3.0	8418	----	----	<b>66,560</b>
	PQ-CD	I	46	61	2.0	----	5612	----	
	PQ-CD	II	46	51	5.0	----	----	11730	
	PQ-CD	III	46	41	5.0	----	----	9430	
	PQ-CD	IV	46	31	5.0	----	----	7130	
	PQ-AB	III	48	101	5.0	----	----	24240	
<b>III</b>	PQ-EF	I	48	121	3.0	17424	----	----	<b>66,780</b>
	PQ-EF	I	48	121	2.0	----	11616	----	
	PQ-EF	II	68	111	5.0	----	----	37740	
<b>IV</b>	PQ-EF	III	63	101	5.0	----	----	31815	<b>63,035</b>
	PQ-EF	IV	58	91	5.0	----	----	26390	
	PQ-CD	V	46	21	5.0	----	----	4830	
<b>V</b>	PQ-AB	IV	48	91	5.0	----	----	19565	<b>56,420</b>
	PQ-AB	V	38	81	5.0	----	----	15390	
	PQ-EF	V	53	81	5.0	----	----	21465	
<b>TOTAL PRODUCTION</b>						<b>46,896</b>	<b>31,264</b>	<b>2,39,140</b>	<b>3,17,300</b>

  
**G.RAVICHANDRAN, M.Sc. PG.D.M.E.M.,**  
**MINING GEOLOGIST**  
**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**





## Base Line Studies

The base line studies is prepared for Rough stone, Jelly & Gravel quarry Ethirkottai Village, Vembakottai Taluk, Virudhunagar District, over an extent of 2-28.00 hectares in SF Nos. 672/3, 674, 675/2 & 676/3. The proposed quarry lease will be granted for a period of 5 years. The total planned production quantity for 5 year in rough stone 2,39,140cum, weathered rock 31,264cum & Gravel 46,896 cum.

The project in the area will provide a quit considerable employment to nearby village which in turn enhance the earring source of the nearby village. The comprehensive base line studies and standards constitute of collecting data on ambient air quality, dust fall rate, water quality, soil analyze, noise level and ground vibration study in the area proposed for quarrying along with flora and fauna statistics.

### **General approach to Environment:**

The environment studies besides data comprise of the features present of the site area its includes environmental features such as forest area, conservation area, water bodies, industries, wild life and fauna place of historic and importance etc.,

1. Air environment
2. Noise environment
3. Water environment
4. Ecology (biological and cultural environment)
5. Physical environment

### **Air Environment**

The rough stone quarry is non toxic which does not emit any undesirable pollution in the form of solid, liquid and gas. The dust emitted during the transportation of vehicles and the drilling will be carried out in wet condition to prevent dust into air and the haul roads will be periodically sprinkled with mist water spray to prevent dust into the atmosphere. The area in and around is quit fresh and the impact on air environment will always be under controlled and will be monitored. No processing or beneficiation is proposed except quarrying hence the impact on air will be controlled monitored and mitigated.

### **Noise Environment**

The noise will be only during blasting. For controlling noise prepare and adequate explosives will be charged to the short holes. The machineries will be properly made preventive maintains to avoid much noise during machinery working. Except these features there are no possibilities of producing much noise during quarry working.

(X) S. Rauty.

## Ground vibration studies

The vibration source only through the movement of vehicles where the frequency is also very less. Hence the vibration is well below the standard permissible by MOEF. Displacement, velocity and acceleration of the three kinematics descriptions which are to be studied to describe ground motion. The peak particle velocity is the more referred since the area is virgin there is no significant measured velocity found in the area. During blasting delay electric detonators will be used to minimize vibration during blasting.

## Water Environment

Geo - physical investigation was carried out by adopting the method. To find out the lateral variation and vertical in homogeneity's. The hydro - geological report is enclosed.

SCHLUMBERGER

## Soil analysis

The area applied for mining lease is flat terrain with little undulations covered by gravel for a depth of 3.0 meter followed by weathered rock and massive rock. The gravel is loose and natural growths to trees or plants are negligible except small bushes.

**Climate** The area receives annual average rain fall of 825mm during southwest monsoon (June - Sep) and northeast monsoon (Oct - Dec). Temperature falls between 42°C - 23° C. Rainy season is three months in a year from October to December during monsoon. Temperature is maximum during May - June in a year.

## Flora and fauna in and around the area

In small quarrying projects like this which involves very limited operations like secondary drilling and blasting. Conservation of flora and fauna along with ecology does not have significant impact of the overall eco system. A detail survey related to flora and fauna was observed physically. The in and around area was seasonal dry cultivation, predominantly maize, cotton and millet and naturally grown trees like neem tree, karuvelam (juliflora) etc. The fauna is goat, rat, crow, cat, ant, cow and squirrel etc.

**Conclusion** The base line studies reveals no hazardous levels of dust and noise and prevailing at the project area. A well implemented environment management plan as discussed in the mining plan will help in mitigation the adverse effects due to quarry activities.

The flora in the area is only small thorny bushes as much of the area exhibits flat terrain. No trees are proposed to uproot for the project and new trees will be planted on boundary barrier which will act as acoustic sound barriers. Environment care and attitude preventing environment is instructed to the proponent and advice to carry out and mitigate the minor impacts due to quarrying.


(X) S. Prathy

## HYDROGEOLOCAL SURVEY REPORT



1. Name of the Applicant : Thiru. S. Ramachandran
2. Major/ minor mineral : Roughstone, Jelly and gravel (minor mineral)
3. Location :
  - i). Survey nos : 672/3, 674, 675/2 & 676/3
  - ii). Village : Ethirkottai
  - iii). Taluk : Vembakottai
  - iv). District : Virudhunagar
4. Total Extent : 2-28.00 Hectares
5. Category of ground water : safe category (over all district)
6. Geomorphology : plain terrain covered with Earth soil  
thorny bushes and no vegetations and the  
slope of the land is very gentle towards south.
7. Geology : Earth Soil, weathered & massive charnockite.
8. Climate : Tropical
9. Average annual rainfall : 825mm
10. Nearby recharging sources : There are water recharging source of  
Seasonal odai on western side. These water  
courses are mostly dry in all seasons and will  
have water flow only during heavy rainy  
season. Due to monsoon failure the  
seasonal odai cannot be taken as a recharge  
source.
11. Water level in near area : 40 to 45 meters from the local enquire.
12. Quality of the ground water : Not potable CaCl, NaCl, & CaCo<sub>3</sub>.
13. Hydro- geological conditions: The hard rock area allows rain water seepage  
Only in weathered, fissured and fracture  
zones And the ground water storage and  
Movement is very poor in the study area.
14. Geophysical study : Geophysical Electrical Resistivity survey  
conducted in schlumberger configuration  
(VES) method using IPI2win software for a  
depth of 45m. The VES-Interpreted curve and  
Layers by using IPI2win software shows  
occurrence of hard rock formations below 5m  
depth.

(X) S. Ramachandran

  
**G. RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
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**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12-11-2022**

**1. GEOPHYSICAL ELECTRICAL RESISTIVITY SURVEY:  
THE SCHLUMBERGER ARRAY**

Geophysical Electrical Resistivity survey conducted in schlumberger Configuration (VES) method using IPI2win Software. The Schlumberger array is an array where four electrodes are placed in line around a common midpoint. The two outer electrodes, A and B, are current electrodes, and the two inner electrodes, M and N, are potential electrodes placed close together. With the Schlumberger array, for each measurement the current electrodes A and B are moved outward to a greater separation throughout the survey, while the potential electrodes M and N stay in the same position until the observed voltage becomes too small to measure (source). At this point, the potential electrodes M and N are moved outward to a new spacing. As a rule of the thumb, the reasonable distance between M and N should be equal or less than one-fifth of the distance between A and B at the beginning. This ratio goes about up to one-tenth or one-fifteenth depending on the signal strength. The Schlumberger array is commonly used for vertical electrical sounding (VES) for groundwater and aggregate minerals. Vertical electrical sounding (VES) using the Schlumberger array provides better resolution.

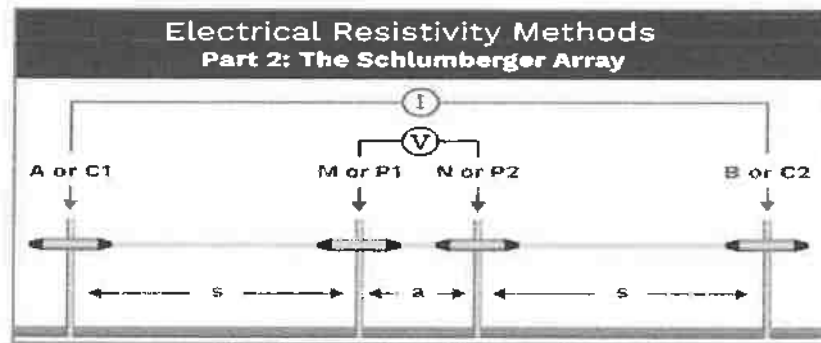


Fig No:1, Schlumberger Array



Fig No: 2. Model DDR-3 Electrical Resistivity Meter

(X) S. Rantey.



N	AGE	MM	SP	V	I	K	Roz
1	15	1	0	104	1	6.263	11531
2	3	1	0	236	1	27.43	6884
3	6	1	0	004	1	112.3	9130
4	9	1	0	052	1	25.98	1474
5	12	1	0	046	1	49.5	7577
6	12	4	0	144	1	108.6	10834
7	15	4	0	09	1	103.97	105.2
8	20	4	0	075	1	211.32	216.7
9	25	4	0	051	1	427.73	287.92
10	30	4	0	051	1	712.72	284
11	35	12	0	137	1	236.19	389.9
12	38	12	0	121	1	311.29	25.65
13	40	12	0	138	1	435.45	442.9
14	45	12	0	025	1	526.72	483.44
15	50	12	0	071	1	645.92	459
16	60	12	0	057	1	935.25	625.15
17	50	20	0	132	1	545.78	625.71
18	70	20	0	056	1	752.98	640.88
19	80	20	0	071	1	988.6	732.31
20	90	20	0	052	1	1257	729.11
21	100	20	0	052	1	1505	1000
22	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0

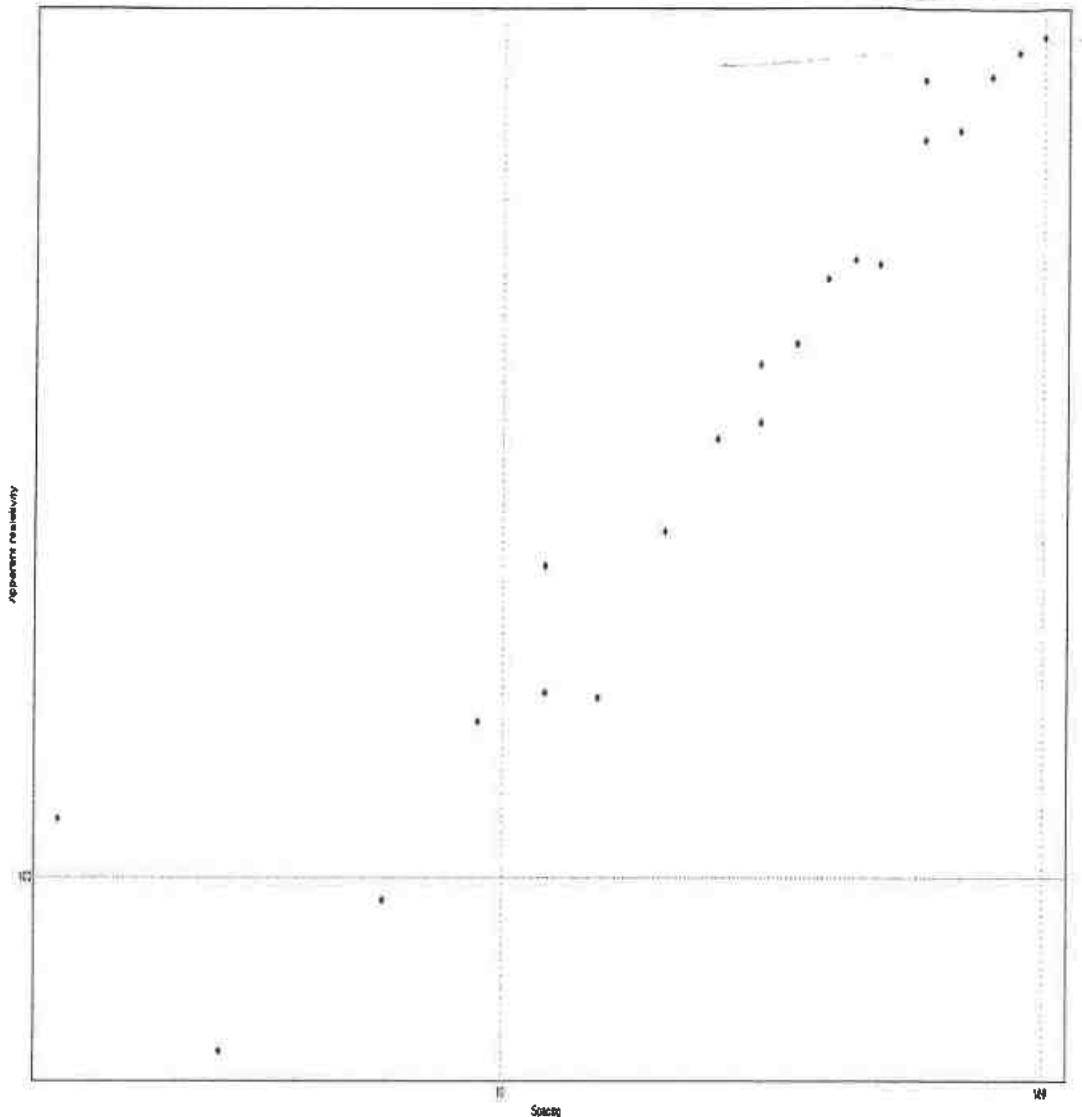
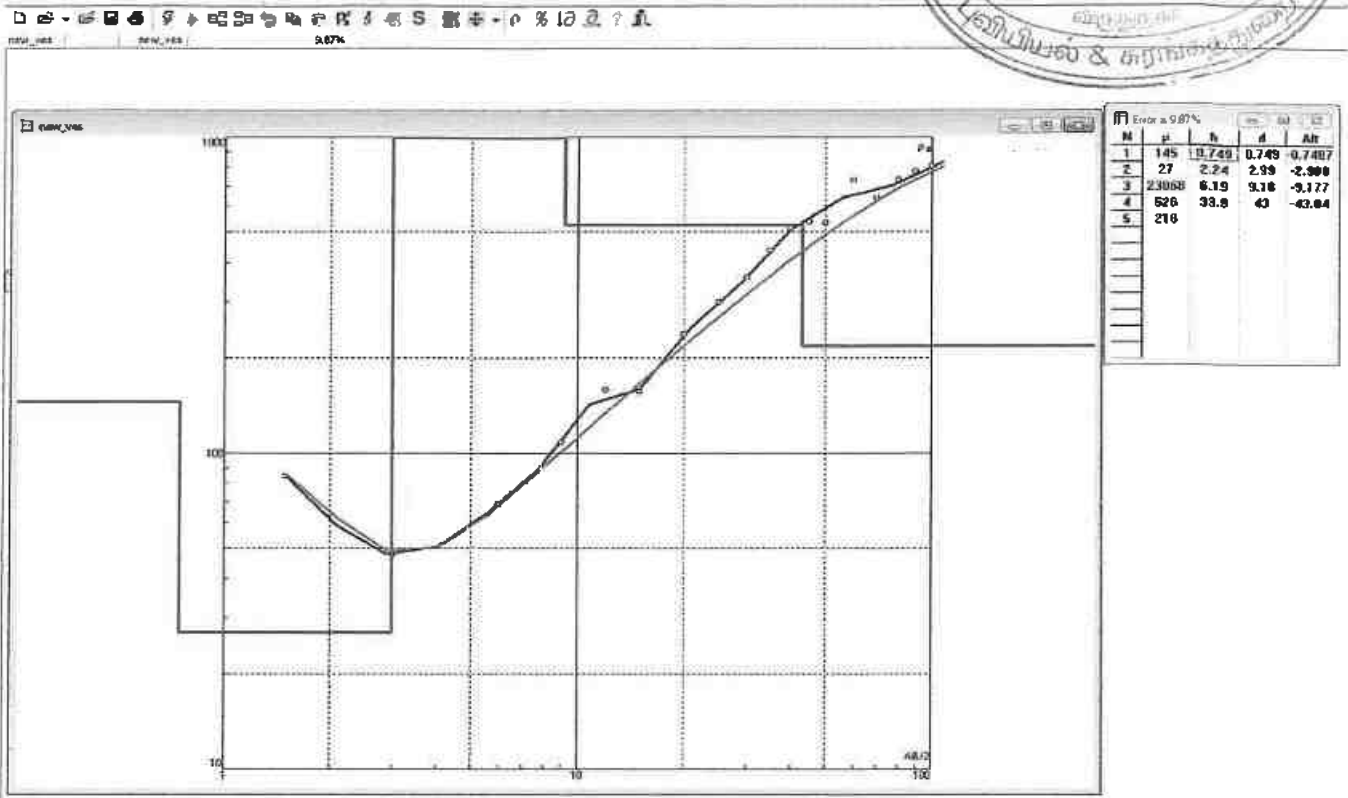


Fig.No:3 Image showing New VES data sheet by using IPI2win software

(X) S. Hanley



**Figure 4 Vertical electrical Sounding Interpreted curve & Layers by using IPI2win software**

**VES- INFERRED STRATA**

- Ground level -0-3 m : Gravel with 114 Ohm. Resistivity
- 3-5m : Weathered formation with 156 Ohm. Resistivity
- 5m-40m : Massive formation on charnockite rock with 1479 Ohm. Resistivity
- 40m -45m : Water level fluctuations with 342hm.m resistivity
- 45m - 100m : Fully massive formation with 2500 Ohm. Resistivity

The presence of soil followed by Charnockite formation with moderate resistivity is indicative of the poor water bearing aquifer. The deeper layer is having curve breaks around 40m to 45m depth with possible potential fractures.

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**VALID UPTO: 12.12.2025**

(X) *S. Ravi*



भारत सरकार / GOVERNMENT OF INDIA  
 खान मंत्रालय / MINISTRY OF MINES  
 भारतीय खान ब्यूरो / INDIAN BUREAU OF MINES



*G. Ravichandran*

अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र  
 (खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)  
**CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON**  
 (Under Rule 22C of Mineral Concession Rules, 1960)

श्री जी. रविचंद्रण, वेन्निला लिविंग्स, जी-एच, बी ब्लॉक, रेट्टैवयकाल, वयलूर, रोड, तिरुची - 620 102, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का सतोषजनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri. G. Ravichandran, Vennila Livings, G-H, B block, Rettaivaykkal Vayalur Road, Trichy - 620 102, whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकी पंजीयन संख्या है

His registration number is

RQP / MAS / 197 / 2005 / A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 11.12.2025 को समाप्त होगी।

This recognition is valid for a period of 10 years ending on 12.12.2025.

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।

This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान/ Place : Chennai

दिनांक/ Date : 13.11.2015

*G. Ravichandran*  
**G. RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
**MINING GEOLOGIST**  
 RQP / MAS / 197 / 2005 / A  
 VALID UPTO: 12.12.2025

*G. Ravichandran*  
 क्षेत्रीय खान नियंत्रक/ Regional Controller of Mines  
 भारतीय खान ब्यूरो/ Indian Bureau of Mines  
 चेन्नई क्षेत्र/ Chennai Region

*G. Ravichandran*



**புவியியல் மற்றும் சுரங்கத்துறை**

உதவி இயக்குநர் அலுவலகம்,  
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,  
விருதுநகர்.

ந.க.எண்: கேவி1/664/2021-கனிமம்,

நாள்: 11.02.2022.

**குறிப்பாணை**

**பொருள்:** கனிமங்களும் குவாரிகளும் - விருதுநகர் மாவட்டம் - வெம்பக்கோட்டை வட்டம் - எதிர்கோட்டை கிராமம் - பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேர் - பத்து வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கல் - சரியான பரப்பு (Precise Area) தேர்வு செய்யப்பட்டது - சுரங்கத்திட்டம் மற்றும் மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்க கோருவது - தொடர்பாக.

- பார்வை:**
1. திரு.சு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார், எதிர்கோட்டை விண்ணப்பம் நாள்: 08.09.2021.
  2. இவ்வலுவலக கடிதம் எண் ந.க.கேவி1/664.2021, நாள்: 15.09.2021.
  3. சாத்தூர் வருவாய் கோட்டாட்சியர் கடிதம் எண்: மூ.மு.அ2/4675/2021 நாள்: 31.01.2021.
  4. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 09.02.2022.
  5. 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 மற்றும் 42.
  6. அரசாணை எண்.169 தொழில் (எம்.எம்.சி.1) துறை, நாள்: 04.08.2020.
  7. அரசாணை எண்.208, தொழில் (எம்.எம்.சி.1) துறை, நாள்: 21.09.2020.
  8. தொடர்புடைய ஆவணங்கள்.

\*\*\*\*\*

விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேரில் 10 வருடங்களுக்கு உடைகல்

(X) S. Ramesh

மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கக்கோரி விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை அஞ்சல், E.ரெட்டியாபட்டி கிராமம், கதவு எண்: 1/28 என்ற முகவரியில் குடியிருந்து வரும் திரு.சு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் என்பவர் பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

சாத்தூர் வருவாய் கோட்டாட்சியர் மற்றும் புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோர் கீழ்க்காணும் நிபந்தனைகளுக்குட்பட்டு மேற்கண்ட புலங்களில் உடைகல், கிராவல் குவாரி குத்தகை உரிமம் ஐந்தாண்டுகளுக்கு வழங்க பரிந்துரை செய்துள்ளனர்.


- 1) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு இடைவெளி விடுத்து குவாரி செய்தல் வேண்டும்.
- 2) புலங்களின் அருகில் செல்லும் வண்டிப்பாதைக்கு 10 மீ பாதுகாப்பு இடைவெளி பேணப்பட வேண்டும்.
- 3) பொதுமக்கள் / விவசாய நிலங்களுக்கு பாதிப்பு ஏற்படாத வகையில் தகுதி வாய்ந்த அங்கீகரிக்கப்பட்ட நபர்கள் மூலம் வெடிமருந்துகள் சேமிக்கப்பட்டு குவாரியில் வெடித்தல் வேண்டும்.
- 4) சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.
- 5) குவாரியில் வேலை செய்யும் தொழிலாளர்கள் தொழிலாளர் நலவாரியம் மற்றும் காப்பீடு திட்டத்தில் பதிவு செய்து தொழிலாளர் நலன் பேண்பட வேண்டும்.
- 6) குழந்தை தொழிலாளர்களை குவாரி பணியில் அமர்த்தக் கூடாது.
- 7) கனிமங்களை வாகனங்களில் கொண்டு செல்லும் போது பாதுகாப்பாளர்கள், பொது மக்கள் பாதிக்காதவண்ணம் தார்பாய்கள் கொண்டு மூடி எடுத்துச் செல்ல வேண்டும்.

எனவே, துறை அலுவலர்களின் பரிந்துரையினை ஏற்றும் நிபந்தனைகளுக்கு உட்பட்டும், விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேர் நிலத்திற்கு 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 மற்றும் 20-ன்படி ஐந்து வருடகாலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக (Precise area) கருதப்படுகிறது.

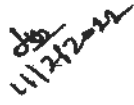




தமிழ்நாடு சிறுசுளிம சலுகை விதிகள்-1959 விதி எண்: 41ன்படி குவாரி பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்கத் திட்டத்தினை (Mining Plan) 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், விதி எண்: 42-ன்படி மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (State Level Environmental Impact Assessment Authority) இசைவினைப் பெற்று சமர்ப்பிக்குமாறும் மனுதாரர் திரு.க.ராமச்சந்திரன் கேட்டுக் கொள்ளப்படுகிறார்.

  
உதவி இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
விருதுநகர்

பெறுநர்  
திரு.க.ராமச்சந்திரன்,  
த/பெ. சுந்தரரெட்டியார்  
கதவு எண்: 1/28  
E.ரெட்டியாபட்டி கிராமம்,  
எதிர்கோட்டை அஞ்சல்,  
வெம்பக்கோட்டை வட்டம்,  
விருதுநகர் மாவட்டம்.

  
11/2/2022

நகல்  
உறுப்பினர் செயலர்,  
மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம் (SEIAA),  
சென்னை.





இ ஆய்வறிக்கை  
(நாள்:09.02.2022)

விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை அஞ்சல், E.ரெட்டியாபட்டி கிராமம், கதவு எண்: 1/28 என்ற முகவரியில் குடியிருந்து வரும் திரு.சு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் என்பவர் விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேரில் பத்து வருட காலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வேண்டி 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்.19 -ன் படி விண்ணப்பம் செய்திருந்தார். விண்ணப்ப புலங்கள் 09.02.2022 தினத்தன்று ஆய்வு செய்யப்பட்டது.

விண்ணப்பிக்கப்பட்ட புல எண்கள்: 672/3 (0.23.00), 675/2 (0.41.50) ஆகியவை பட்டா எண்: 388 -ன் படி திரு.ராமச்சந்திரன் என்பவர் பெயரிலும் புல எண்கள்: 674 (1.20.50) மற்றும் 676/3 (0.43.00) ஆகியவை பட்டா எண்கள்: 1318 மற்றும் 611 -ன் படி திரு.சு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் பெயரில் எதிர்கோட்டை கிராம ஆவணங்களில் பதிவாகியுள்ளது. இவ்வாறாக மேற்கண்ட புலங்களுக்கு விண்ணப்பதாரர் முழு உரிமையுடையவராகிறார்.

விண்ணப்பிக்கப்பட்ட புலங்களை சுற்றிலும் 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், பள்ளிகள், கோயில்கள், மசூதிகள், கடுகாடு ஏதும் இல்லை. 50 மீட்டர் சுற்றளவில் தேசிய / மாநில நெடுஞ்சாலைகள், ஆறுகள், கட்டிடங்கள், உயர்/தாழ் அழுத்த பின்கம்பிகள் இல்லை. புலங்களுக்கு அருகிலுள்ள புல எண்கள்: 673, 683 ஆகியவற்றில் செயல்படாத குவாரிகள் உள்ளது. புல எண்: 648 அரசு நிலத்தில் பூடிவடைந்த குவாரி உள்ளது. உயர்வகை மரங்கள் ஏதுவும் இல்லை. புலங்களுக்கு சென்று வர பாதை வசதி உள்ளது.

விண்ணப்பிக்கப்பட்ட புலங்கள் புஞ்சை வகைப்பாடுடைய தூசு நிலங்களாகும். புலங்களின் மேற்பரப்பு சமதளமாகவும், விவசாய பணிகள் ஏதுமின்றி உள்ளது. புலங்கள் ஒன்றோடு ஒன்று தொடர்ச்சியாக உள்ளது. மேற்பரப்பில் காணப்படும் கிராவல் கனிமத்தை தொடர்ந்து சிதைந்த பாறைகளும் (Weathered Rock) சார்னகைட் (Charnockite) எனப்படும் கடின பாறைகளும் (Hard rock) உள்ளது. கடின பாறைகளில் காணப்படும் வேறுபட்ட நிறங்கள் (Different in colours), இணைப்புகள் (Joints), பிளவுகள், கீரல்கள் (Cracks) வெடிப்புகள் மற்றும் மாறுபட்ட அளவு கொண்ட கனிமங்கள் காரணமாக இப்பாறைகளில் மெருகேற்றக் கூடிய

(X) S. Rawlin

வண்ண கற்களை (Polished Granite / Blocks) உற்பத்தி செய்ய இயலாது. இவ்வகை பாறைகளில் இருந்து கட்டிடப்பணிகள் மற்றும் சாலை / இரயில்வே பணிகளுக்கு தேவைப்படும் கற்கள், ஜல்லிகள் மற்றும் எம்-சாண்ட் ஆகியவற்றை உற்பத்தி செய்ய இயலும்.

எனவே திரு.சு.ராமச்சந்திரன் என்பவரின் கோரிக்கையினை ஏற்று விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், பட்டா புல எண்கள்: 672/3 (0.23.00), 674 (1.20.50), 675/2 (0.41.50) மற்றும் 676/3 (0.43.00) மொத்தப்பரப்பு 2.28.00 ஹெக்டேரில் உடைகல் மற்றும் கிராவல் குவாரி உரிமை அரசாணை எண்.208, தொழில் (எம்.எம்.சி.1) துறை, நாள்: 21.09.2020 -ன் படி ஐந்தாண்டுகளுக்கு (5) தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதிஎண்.19 மற்றும் 20-ன் படி பின்வரும் நிபந்தனைகளுக்குட்பட்டு வழங்க பரிந்துரை செய்கிறேன்.

நிபந்தனைகள் :

- 1) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு இடைவெளி விடுத்து குவாரி செய்தல் வேண்டும்.
- 2) புலங்களின் அருகில் செல்லும் வண்டிப்பாதைக்கு 10 மீ பாதுகாப்பு இடைவெளி பேணப்பட வேண்டும்.
- 3) பொதுமக்கள் / விவசாய நிலங்களுக்கு பாதிப்பு ஏற்படாத வகையில் தகுதி வாய்ந்த அங்கீகரிக்கப்பட்ட நபர்கள் மூலம் வெடிமருந்துகள் சேமிக்கப்பட்டு குவாரியில் வெடித்தல் வேண்டும். குவாரியில் குறைந்த சக்தி கொண்ட வெடி மருந்துகளை பயன்படுத்தல் வேண்டும்.
- 4) சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமை வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.
- 5) குவாரியில் வேலை செய்யும் தொழிலாளர்கள் தொழிலாளர் நலவாரியம் மற்றும் காப்பீடு திட்டத்தில் பதிவு செய்து தொழிலாளர் நலன் பேண்பட வேண்டும்.
- 6) குழந்தை தொழிலாளர்களை குவாரி பணியில் அமர்த்தக் கூடாது.
- 7) கனிமங்களை வாகனங்களில் கொண்டு செல்லும் போது பாதசாரிகள், பொது மக்கள் மற்றும் பிற வாகனங்கள் பாதிக்காதவண்ணம் தூர்பாய்கள் கொண்டு மூடி எடுத்துச் செல்ல வேண்டும்.

உதவி இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
விருதுநகர்.

(X) S. Senthil.



**இந்திய அரசாங்கம்**  
**Government of India**




**சு. ராமச்சந்திரன்**  
**S Ramachandran**  
 தந்தை : சுந்தரம் ரெட்டியார்  
 Father : Sundara Reddyiar

பிறந்த நாள் / Year of Birth: 1956  
 ஆண் / Male



**8085 8185 0068**

**ஆதார் - சாதாரண மனிதனின் அதிகாரம்**

**உறுதி அடையாள அமைப்பு**  
**Unique Identification Authority of India**



முகவரி: 50 எதிரே ரெட்டியார்  
 வீதி 1/27, வடக்கு தெரு, வெம்பகோட்டை, வட  
 திண்டுக்கோட்டை, எதிரே ரெட்டியார்  
 எதிரே ரெட்டியார், விருதுநகர், தமிழ்நாடு  
 626131

Address: S/O Sundara Reddyiar, 1/27, NORTH STREET, VEMBAKOTTAI VIA, E.T.RETTIYAPATTI, Edirkottai, Edirkottai, Virudhunagar, Tamil Nadu, 626131

**8085 8185 0068**

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**இந்திய அரசாங்கம்**  
**Government of India**




**சு. ராமச்சந்திரன்**  
**S Ramachandran**  
 தந்தை : சுந்தரம் ரெட்டியார்  
 Father : Sundara Reddyiar


பிறந்த நாள் / Year of Birth: 1956  
 ஆண் / Male



**8085 8185 0068**

**ஆதார் - சாதாரண மனிதனின் அதிகாரம்**

**உறுதி அடையாள அமைப்பு**  
**Unique Identification Authority of India**



முகவரி: 50 எதிரே ரெட்டியார்  
 வீதி 1/27, வடக்கு தெரு, வெம்பகோட்டை, வட  
 திண்டுக்கோட்டை, எதிரே ரெட்டியார்  
 எதிரே ரெட்டியார், விருதுநகர், தமிழ்நாடு  
 626131

Address: S/O Sundara Reddyiar, 1/27, NORTH STREET, VEMBAKOTTAI VIA, E.T.RETTIYAPATTI, Edirkottai, Edirkottai, Virudhunagar, Tamil Nadu, 626131

**8085 8185 0068**

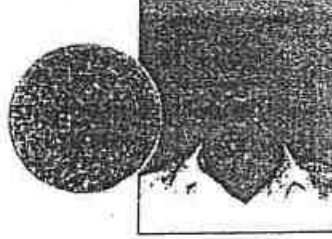
1947 1800 300 1947 help@uidai.gov.in www.uidai.gov.in

⊗ S. Reddyar ..



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இந்தியத் தேர்தல் ஆணையம்  
வாக்காளர் அடையாள அட்டை  
DPH1639319



Elector's Name : Ramachandran

வாக்காளர் பெயர் : ராமச்சந்திரன்

Father's Name : Sundarareddiyar

தந்தை பெயர் : சுந்தர ரெட்டியார்

Sex / பாலினம் : Male / ஆண்

Age as on 1.1.1999

11.1999 அன்று வயது

42

Address : 19B

E.Reddiyapatti Block No1

E.Reddiyapatti (P)

E.Reddiyapatti

VIDURHUNAGAR - 626131

முகவரி: 19B

இ.ரெட்டியபட்டி வார்டு எண்-1

இ.ரெட்டியபட்டி (ஊ)

இ.ரெட்டியபட்டி

விருதுநகர் - 626131

Facsimile Signature of Electoral Registration Officer

வாக்காளர் பதிவு அலுவலரின் கையெழுப்ப முத்திரை

For 207 - .107Sivakasi

Assembly Constituency

207 - சிவகாசி

சட்டமன்ற தொகுதி

Place : Sivakasi

இடம் : சிவகாசி

Date / தேதி : 5.12.2000

This card may be used as an Identity Card  
under different Government Schemes

இந்த அட்டை மீண்டும் அரசின் பல்வேறு திட்டங்களில்  
கீழ் அட்டையாளர் அட்டையாகப் பயன்படுத்தலாம். 17.11.98

(X) S. Ramesh



ANNEXURE-VIII

மாவு. இராமநாதபுரம்

வட்டம். சிக்தூர்

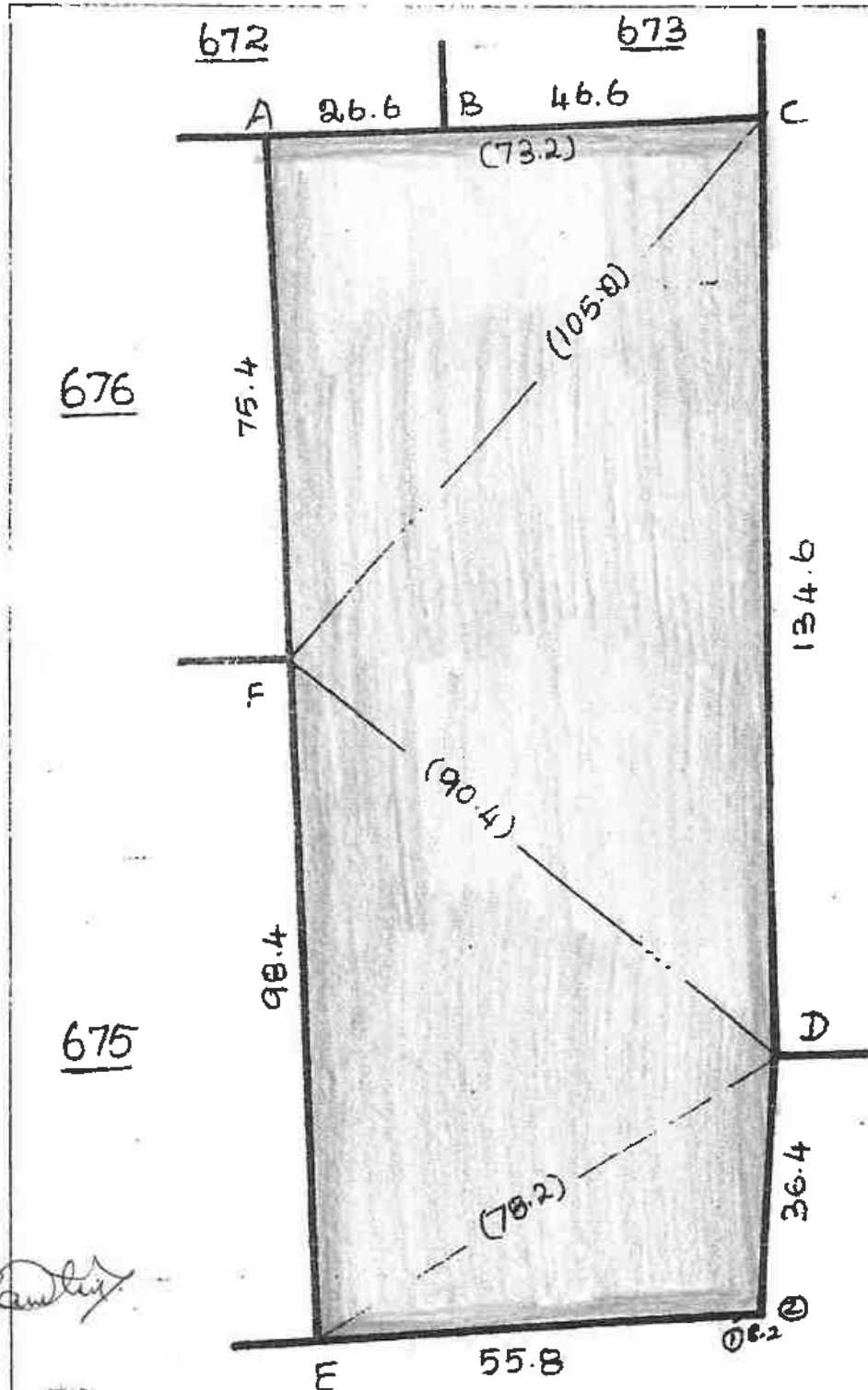
புல எண். 674



மாண.

பெயர். சி

பரப்பு: ஹெக்டேர் 1.20.0



647

(X) S. Ramani

**G. RAVICHANDRAN, M.S. PONDICHERRY,**  
MINING GEOLOGIST

RQP / MAS 1407 / 2005  
VALID UPTO: 12.12.2025

கனம் இலாகா கமிஷனரின் பிளே  
LEASE APPLIED AREA

சுமார்  
கனம் இலாகா கமிஷனர்

மாண. இலாகா கமிஷனர்  
(சிக்தூர்)



மாணவ. டி. ச. சிவசுந்தரம்

வட்டம். சாத்தூர்

புல எண். 1672

23

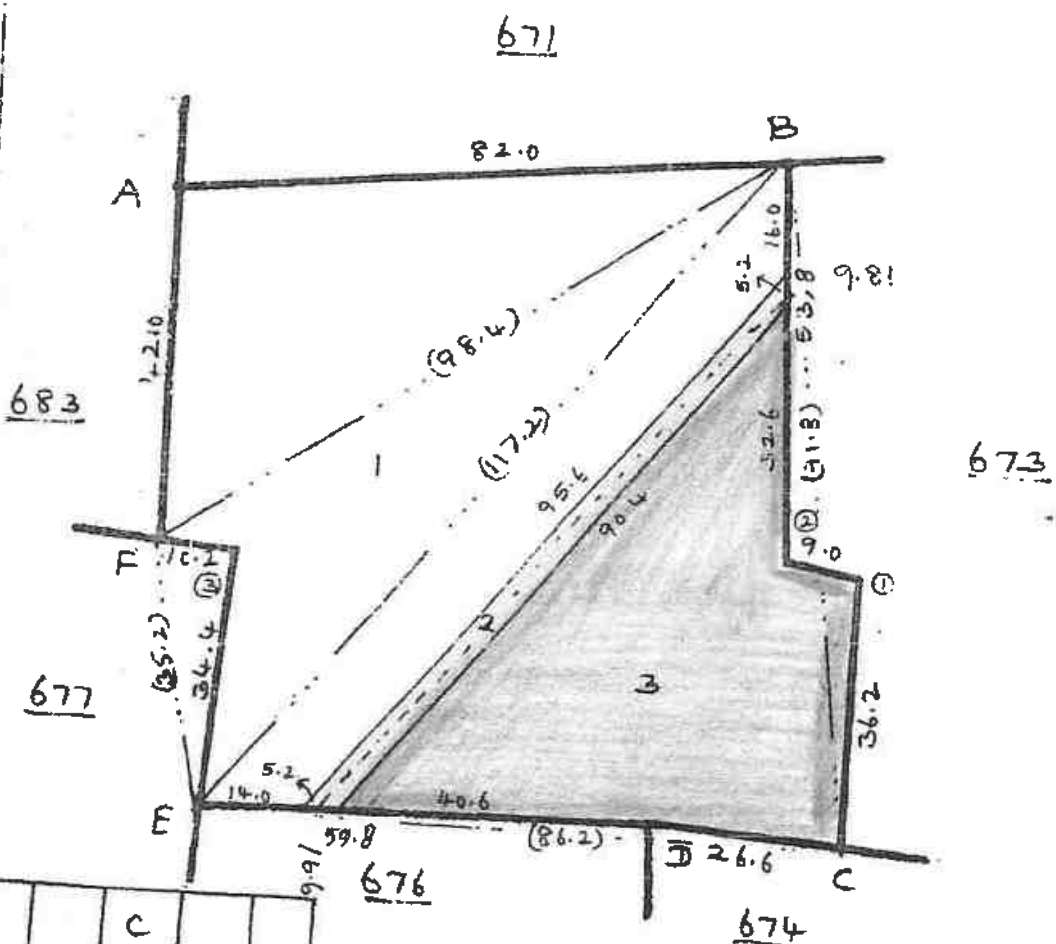
2 தனி இயக்குநர் அலுவலகம்  
விடுதிநகர் மாநகரம் எண் 23

11 7 MAR 2022 எண் 18

சீரமைப்பு

பெயர். சாதிக்

பரப்பு: ஹெக்டேர் 0 ஏர் 6



	C		
	86.2		
D	1.4	59.8	
	E		
	B		
	91.8		
2	3.6	38.0	
	35.8	5.2	
	F		
	10.0		
	E		
	35.2		
	F		
	2.4		

■ - இவ்வாறு உரிமை கோரியிருக்கிற LEASE APPLIED AREA.

■ - இவ்வாறு உரிமை கோரியிருக்கிற

(X) சி. ரெகி.

சாத்தூர்

சாத்தூர்

சாத்தூர்

G. RAVICHANDRAN, M.S. ENGINEER  
MINING GEOLOGIST  
RQP / MAS / 197 / 2002  
VALID UPTO: 12.12.2025

மாணவ. டி. சி. சிவசுந்தரம்

பரப்பு: ஹெக்டேர் 0 ஏர் 6

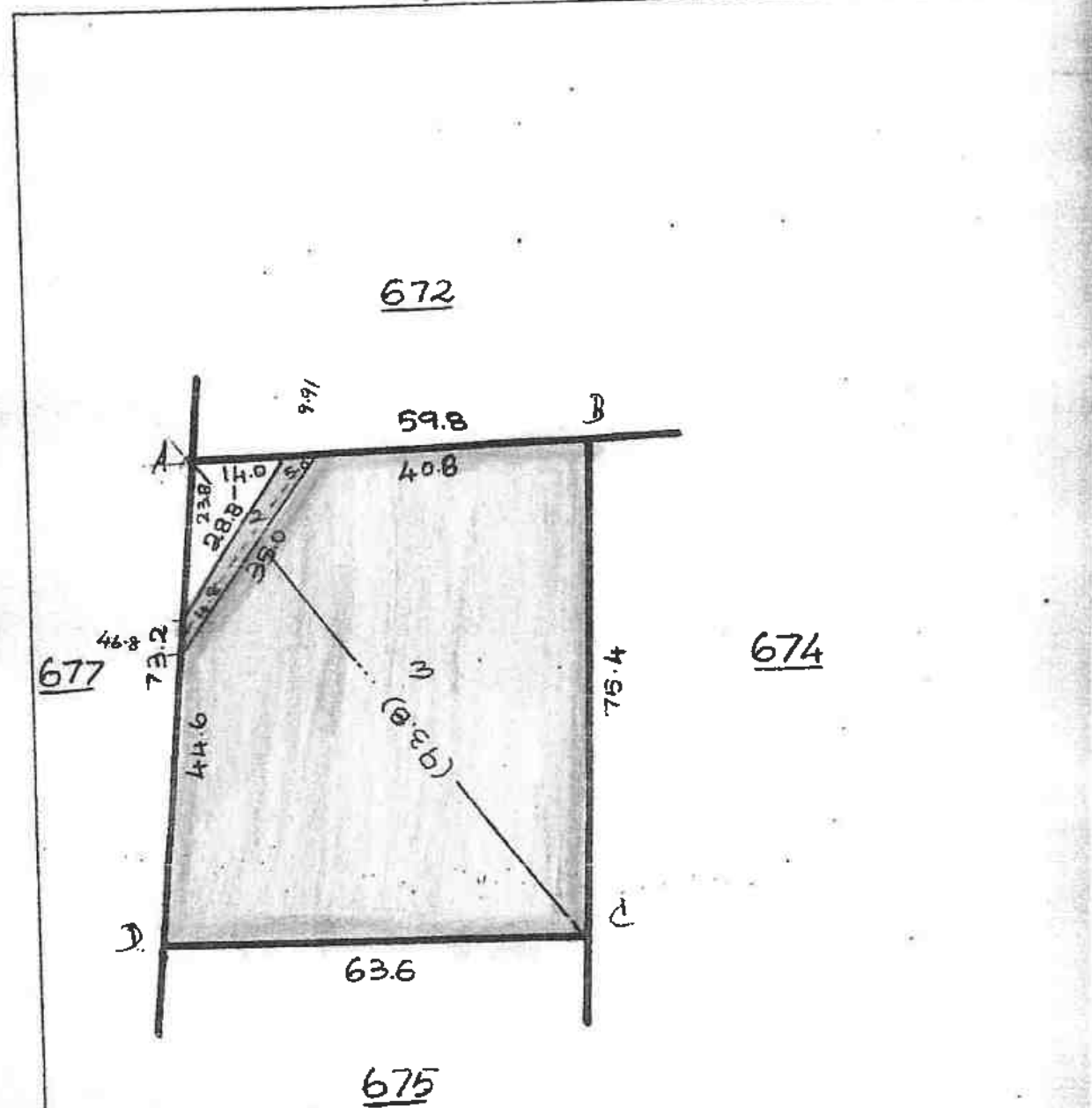
மாவட்டம். கிராமச்செய்யாட்சி


வட்டம். சிக்ரீர்.

புல எண். 676.




பரப்பு: ஹெக்டேர் 0.45.5 ஏர்.



 - இவ்வாறு தரப்பட்ட பரப்பளவிற்கு  
 LEASE APPLIED AREA.

 - இவ்வாறு தரப்பட்ட பரப்பளவு.

  
**G. RAVICHANDRAN, M.Sc. PGD.M.E.**  
 MINING GEOLOGIST  
 RQP / MAS / 1977 / 2005 / A  
 VALID UPTO: 12.12.2025

 S. Ravi  
 தலைவர், வருமான அமைச்சு  
 சென்னை-600 009  
 [சென்னை] 124

7/12/84

கிராமநாதபுரம்,

சித்தூர்.

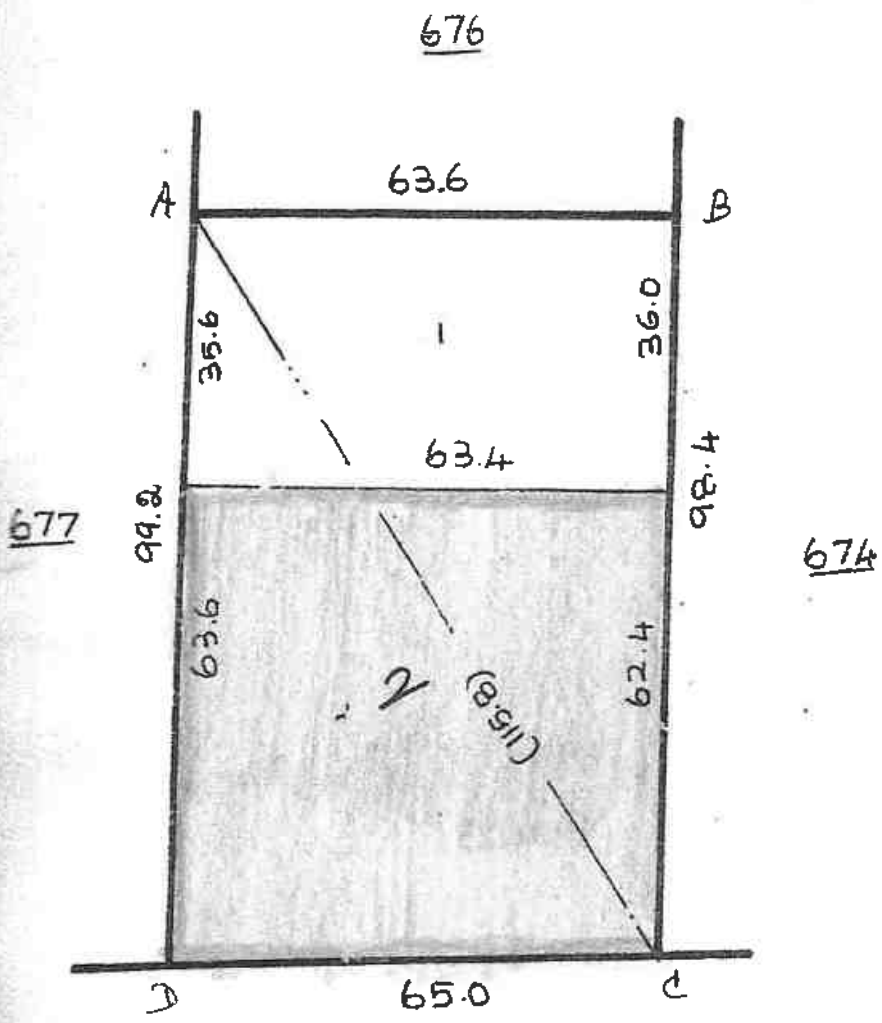
எண். 675.

சுற்றுலா, பொது உட்கட்டிடம் மற்றும் மின்சாரத்துறை



கிராமம்

பரப்பு: ஹெக்டேர் 0.64.0 ஏ



க. ரவிச்சந்திரன்  
சுற்றுலா, பொது உட்கட்டிடம் மற்றும் மின்சாரத்துறை

☐ - கிராம நகராட்சி நிர்வாகம்  
LEASE APPLIED AREA.

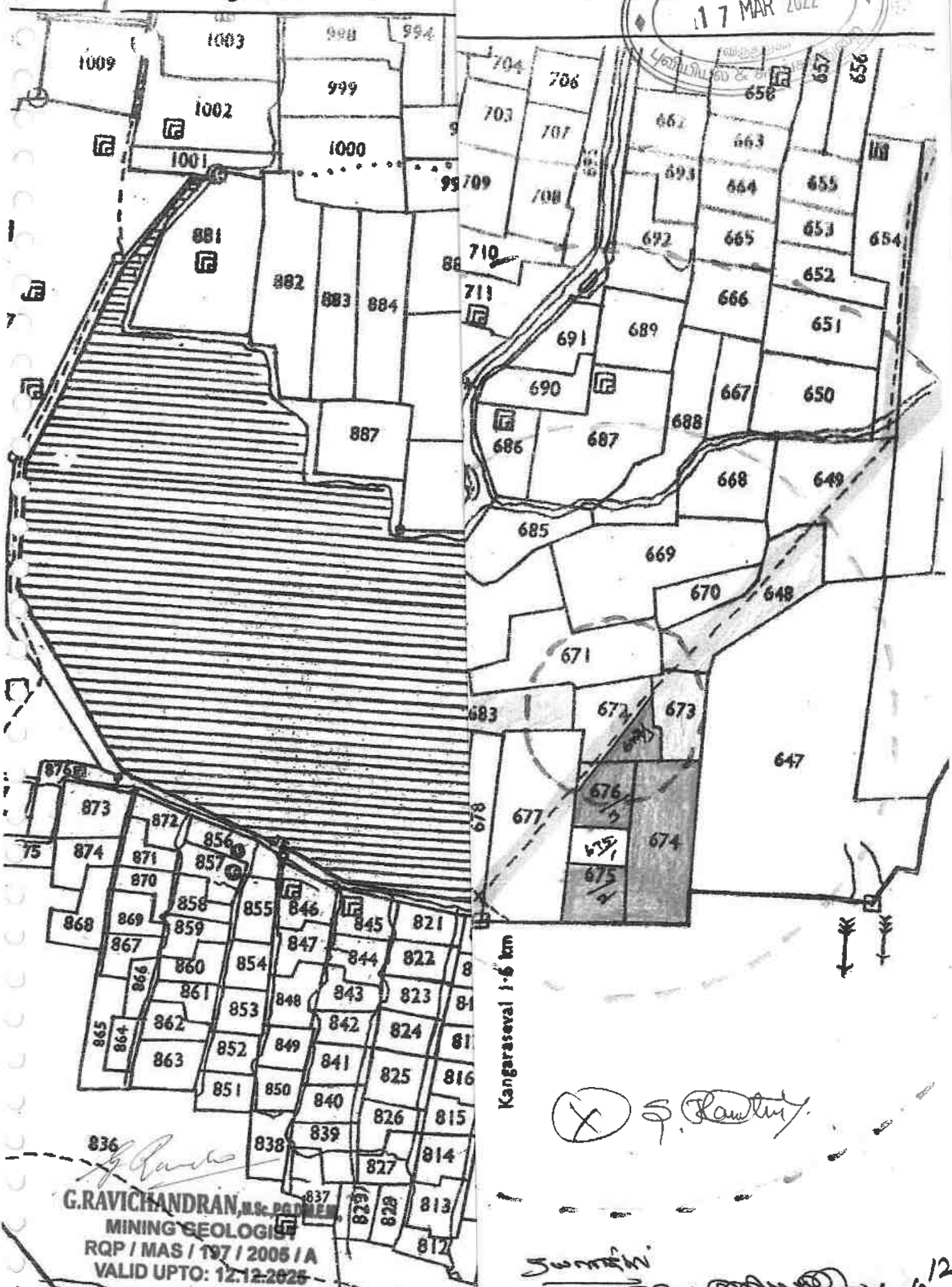
⊗ S. Ravichandran

*S. Ravichandran*  
**G. RAVICHANDRAN, M.Sc. PGD.NEM,**  
**MINING GEOLOGIST**  
 RQP / MAS / 197 / 2005 / 1A  
 VALID UPTO: 12.12.2025  
 20/1/2025

*S. Ravichandran*  
 சென்னை தொழில்நுட்பக் கழகம்  
 11/1/2025

பட்டியல்: 21081

தா.ம.ஃ: வெள்ளாறு: எதிர்வெள்ளாறு



G.RAVICHANDRAN, M.Sc. P.G.D.  
MINING GEOLOGIST  
RQP / MAS / 197 / 2005 / A  
VALID UPTO: 12.12.2025

சுமங்கி  
126



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : விசுவநகர்

வட்டம் : வெம்பக்கோட்டை

வருவாய் கிராமம் : எதிர்கோட்டை

பட்டா எண் : 388

உரிமையாளர்கள் பெயர்

1. க. சாமச்சத்திரன்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
672	1	0 - 42.50	0.84	--	--	--	--	10-05-2003
672	3	0 - 23.00	0.46	--	--	--	--	45/99-00---
675	2	0 - 41.50	0.83	--	--	--	--	10-05-2003
		1 - 7.00	2.13					45/99-00---

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 26/09/005/00388/110579 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 04-03-2022 அன்று 10:39:00 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

(X) S. Paulraj



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு



மாவட்டம் : விருதுநகர்

வட்டம் : வெம்பக்கோட்டை

வருவாய் கிராமம் : எதிர்கோட்டை

பட்டா எண் : 1318

உரிமையாளர்கள் பெயர்

1. சுந்தர் ரெட்டியார்

மகன்

ச.ராமச்சந்திரன்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
674	-	1 - 20.50	2.41	--	--	--	--	----- 03-06-2002
906	1A	0 - 50.00	1.39	--	--	--	--	----- 03-06-2002
906	1B	0 - 50.50	1.39	--	--	--	--	----- 03-06-2002
411	1C1	0 - 2.00	0.10	--	--	--	--	----- 27-10-2014
412	2B2A	0 - 9.00	0.10	--	--	--	--	----- 03-06-2002
		2 - 32.00	5.39					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 26/09/005/01318/90573 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 04-03-2022 அன்று 10:41:54 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

*(Handwritten signature)*



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : விருதுநகர்

வட்டம் : வெம்பக்கோட்டை

வருவாய் கிராமம் : எதிர்கோட்டை

பட்டா எண் : 611

உரிமையாளர்கள் பெயர்

1. சுத்தரெட்டியார்

மகள்

ராமசுந்திரன்

புல எண்	உட்பிரிவு	முன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
294	2A	0 - 32.00	1.34	--	--	--	--	30-09-2015
294	2C	0 - 87.50	3.67	--	--	--	--	
296	1B	0 - 31.00	1.29	--	--	--	--	
296	3	0 - 41.50	1.74	--	--	--	--	
409	1B	0 - 10.50	0.29	--	--	--	--	
409	2	0 - 19.50	0.54	--	--	--	--	
45	-	1 - 7.00	4.48	--	--	--	--	
47	-	0 - 56.00	2.33	--	--	--	--	
670	-	0 - 40.50	1.12	--	--	--	--	03-05-2003
676	1	0 - 1.50	0.06	--	--	--	--	03-05-2003
676	3	0 - 43.00	0.86	--	--	--	--	03-05-2003
687	3	0 - 35.00	0.97	--	--	--	--	16-04-2003
688	2	0 - 85.00	2.35	--	--	--	--	16-04-2003
410	1	0 - 15.00	0.41	--	--	--	--	27-10-2014
410	2	0 - 19.50	0.54	--	--	--	--	
411	1A	0 - 20.50	0.57	--	--	--	--	
46	-	0 - 86.50	3.62	--	--	--	--	
		7 - 31.50	26.18					

குறிப்பு2 :

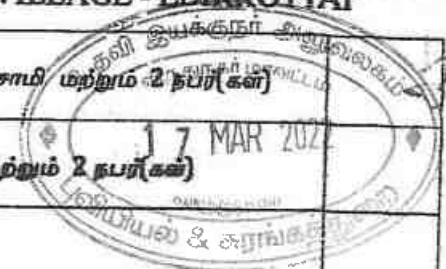


1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 26/09/005/00611/140508 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 04-03-2022 அன்று 10:46:57 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

*(Handwritten signature)*



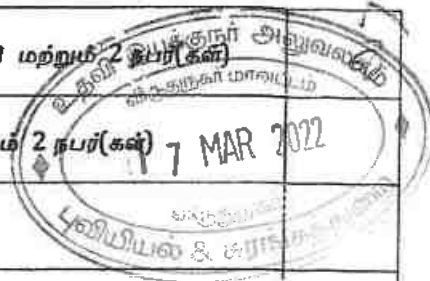
DISTRICT - VIRUDHUNAGAR TALUK - VEMBAKKOTTAI VILLAGE - EDIRKOTTAI



1	569-1	P	4	0	0	4-3	3	2	77	1	36.50	3	77	1003-இருள்சாமி மற்றும் 2 நபர்(கள்)
2	669-2	P	4	0	0	4-3	3	2	77	0	33.50	0	98	1678-கரேக் மற்றும் 2 நபர்(கள்)
TOTAL FOR SURVEY NUMBER-669										1	70.00	4	76	
	670		4	0	0	4-3	3	2	77	0	40.50	1	12	611-ராமசத்திரன்
	671		4	0	0	4-3	3	2	77	1	19.50	3	30	1730-செத்தர் மினால்ஸ் நிறுவனம்
	672-1	P	4	0	0	4-3	3	2	77	0	42.50	0	04	388-க. ராமச்சத்திரன்
	672-2	P	4	0	0	0-0	0	0	00	0	3.00	0	00	வங்கியகரை
	672-2	P	4	0	0	0-0	0	0	00	0	3.00	0	00	வங்கியகரை
	672-3	P	4	0	0	7-3	4	2	00	0	23.00	0	44	388-க. ராமச்சத்திரன்
TOTAL FOR SURVEY NUMBER-672										0	71.50	1	30	
1	673-1		4	0	0	7-3	4	2	00	0	2.50	0	06	1302-ருக்மணி
2	673-2	P	4	0	0	0-0	0	0	00	0	1.50	0	00	வங்கியகரை
2	673-3	P	4	0	0	0-0	0	0	00	0	1.50	0	00	வங்கியகரை
3	673-3	P	4	0	0	7-3	4	2	00	0	49.50	0	98	1302-ருக்மணி . 49.50
TOTAL FOR SURVEY NUMBER-673										0	55.00	1	04	
	674		4	0	0	7-3	4	2	00	1	20.50	2	41	1318-க.ராமச்சத்திரன்
1	675-1		4	0	0	7-3	4	2	00	0	22.50	0	45	1148-துரைபாண்டியன் மற்றும் 7 நபர்(கள்)
2	675-2	P	4	0	0	7-3	4	2	00	0	41.50	0	83	388-க. ராமச்சத்திரன்
TOTAL FOR SURVEY NUMBER-675										0	64.00	1	28	
1	676-1	P	4	0	0	7-3	4	2	00	0	1.50	0	06	611-ராமசத்திரன் அதிகோட்டை கிராமம் வெப்பக்கோட்டை வட்டம்
2	676-2	P	4	0	0	0-0	0	0	00	0	1.00	0	00	வங்கியகரை
2	676-2	P	4	0	0	0-0	0	0	00	0	1.00	0	00	வங்கியகரை
3	676-3	P	4	0	0	7-3	4	2	00	0	43.00	0	86	611-ராமசத்திரன்

X S. Panthi

DISTRICT - VIRUDHUNAGAR TALUK - VEMBAKKOTTAI VILLAGE - EDIRKOTTAI



1	669-1	P	r	y	0	0	4-3	3	2	77	1	36.50	3	77	1003-கிருஷ்ணசாமி மற்றும் 2 நபர்(கள்)
2	669-2	P	r	y	0	0	4-3	3	2	77	0	33.50	0	93	1678-சேரன் மற்றும் 2 நபர்(கள்)
TOTAL FOR SURVEY NUMBER- 669											1	70.00	4	70	
	670		r	y	0	0	4-3	3	2	77	0	40.50	1	12	611-ராமசத்திரன்
	671		r	y	0	0	4-3	3	2	77	1	19.50	3	30	1730-செந்தூர் மினரல்ஸ் திருவணம்
1	672-1	P	r	y	0	0	4-3	3	2	77	0	42.50	0	84	388-ச. ராமச்சத்திரன்
2	672-2	P	r	y	0	0	0-0	0	0	00	0	3.00	0	00	
2	672-2	P	r	y	0	0	0-0	0	0	00	0	3.00	0	00	
3	672-3	P	r	y	0	0	7-2	4	2	00	0	23.00	0	46	388-ச. ராமச்சத்திரன்
TOTAL FOR SURVEY NUMBER- 672											0	71.50	1	30	
1	673-1		r	y	0	0	7-3	4	2	00	0	2.50	0	06	1302-ருக்மணி
2	673-2	P	r	y	0	0	0-0	0	0	00	0	1.50	0	00	
2	673-2	P	r	y	0	0	0-0	0	0	00	0	1.50	0	00	
3	673-3	P	r	y	0	0	7-3	4	2	00	0	49.50	0	90	1302-ருக்மணி . A 9. C
TOTAL FOR SURVEY NUMBER- 673											0	55.00	1	04	
	674		r	y	0	0	7-3	4	2	00	1	20.50	2	41	1318-ச.ராமச்சத்திரன்
1	675-1		r	y	0	0	7-3	4	2	00	0	22.50	0	45	1148-துரைபாண்டியன் மற்றும் 7 நபர்(கள்)
2	675-2	P	r	y	0	0	7-3	4	2	00	0	41.50	0	83	388-ச. ராமச்சத்திரன்
TOTAL FOR SURVEY NUMBER- 675											0	64.00	1	28	
1	676-1	P	r	y	0	0	7-3	4	2	00	0	1.50	0	06	611-ராமசத்திரன்
2	676-2	P	r	y	0	0	0-0	0	0	00	0	1.00	0	00	
2	676-2	P	r	y	0	0	0-0	0	0	00	0	1.00	0	00	
3	676-3	P	r	y	0	0	7-3	4	2	00	0	43.00	0	06	611-ராமசத்திரன்

(X) S. Srinivasan





### MINES LAND PHOTO



விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம் பட்டா புலனண்கள். 672/3, 674, 675/2 & 676/3 மொத்தம் 2-28.00 ஹெக்டேரில் மட்டும் 5 வருடங்களுக்கு உதவிஇயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை, விருதுநகர் மாவட்ட ஆட்சியர் அலுவலக வளாகம், விருதுநகர் அவர்களின் செயல்முறை ஆணை எண். கே.வி.1/664/2021-கனிமம் நாள் 11.02.2022ன் படி திரு. சு. ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் அவர்கள் மனு செய்துள்ளார்கள். மேற்படி இடம் உடைகல், ஜல்லி மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கிறேன்.

மேற்படி இடத்திற்கு செல்வதற்கு அணுகுபாதை வசதி உள்ளது என்றும் சான்றளிக்கிறேன்.

இடம்: எதிர்கோட்டை

நாள்: 22/02/2022

மனுதாரர் கையெப்பம்

*S. Panthi*

கிராம நிர்வாக அலுவலர்.

*S. Panthi*  
22/02/2022

கிராம நிர்வாக அலுவலர்  
எதிர்கோட்டை கிராமம்  
வெம்பக்கோட்டை வட்டம்

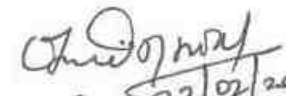
*S. Panthi*



கிராம நிர்வாக அலுவலரின் சான்று

விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம் பட்டா புலனண்கள். 672/3, 674, 675/2 & 676/3 மொத்தம் 2-28.00 ஹெக்டேரில் மட்டும் 5 வருடங்களுக்கு உதவிஇயக்குனர், புலியியல் மற்றும் சுரங்கத்துறை, விருதுநகர் மாவட்ட ஆட்சியர் அலுவலக வளாகம், விருதுநகர் அவர்களின் செயல்முறை ஆணை எண். கே.வி.1/664/2021-கனிமம் நாள் 11.02.2022ன் படி திரு. ச. ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் அவர்கள் மனு செய்துள்ளார்கள். இவர்கள் ஆரம்பிக்க உள்ள உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி இடத்திற்கு செல்ல போதிய அணுகுபாதை வசதி உள்ளது மேலும் நிலத்தை சுற்றி 300மீட்டர் சுற்றளவில் குடியிருப்புகள், கோயில்கள், பள்ளிக்கூடம் ஏதும் இல்லை.

மேற்படி புல எண்கள். மேற்படி கிராம கணக்கு தடை ஆணை புத்தகத்தில் இடம் பெறவில்லை. மேலும் 10கி.மீ. சுற்றளவில் பிற மாவட்ட எல்லையோ, மாநில எல்லையோ இடம்பெறவில்லை. மேற்படி சான்று கனிமவளத்துறைக்கு அளிக்கும் வகைக்காக வழங்கப்படுகிறது.

  
22/03/2022  
கிராம நிர்வாக அலுவலர்  
எதிர்கோட்டை கிராமம்  
வெம்பக்கோட்டை வட்டம்





அனுப்புநர்:

திருமதி. ரா.புஷ்பா, பி.எஸ்.சி.,  
வருவாய் கோட்டாட்சியர்,  
சாத்தூர்.

பெறுநர்:

மாவட்ட ஆட்சியர்,  
விருதுநகர்.

மூ.மு.அ2 / 4675 / 2021, நாள்: 31.01.2022

ஐயா,

பொருள் :

கனிமம் மற்றும் சுரங்கம் - விருதுநகர் மாவட்டம் - சாத்தூர் வட்டம் - எதிர்க்கோட்டை கிராமம் - புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர் நிலங்களில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியது - கருத்துரு அனுப்புதல் - தொடர்பாக.

பார்வை:

1. விருதுநகர் மாவட்ட ஆட்சித்தலைவர் அவர்களின் கடிதம் எண் ந.க கேவி1/664/2021, நாள்: 15.09.2021.
2. வெம்பக்கோட்டை, வருவாய் வட்டாட்சியர் கடிதம் எண். ந.க. அ6/2154/2021, நாள்: 31.12.2021.

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விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரி திரு.ராமச்சந்திரன், த/பெ. சுந்தரரெட்டியார் என்பவர் மனு செய்துள்ளது தொடர்பாக, எனதுறிக்கையினை கீழ்க்கண்டவாறு சமர்ப்பிக்கிறேன்.

நில உரிமை:-

மனுதாரர் குவாரி செய்ய உரிமம் வழங்கக் கோரும் இடம் வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 675/2 (0.41.5) ஆகியவை பட்டா எண். 388 - ராமச்சந்திரன் என்பவர் பெயரிலும், புல எண். 674 (1.20.5) ஆனது பட்டா எண். 1318, புல எண். 676/3 (0.43.0) பட்டா எண். 611 இல் சுந்தரரெட்டியார் மகன் ராமச்சந்திரன் பெயரில் கிராமக் கணக்கில் தாக்கலாகியுள்ளது.

ஆட்சேபணை:-

மேற்படி குவாரி அமைவது குறித்து கோபாலபுரம் கிராமப் பொது மக்களிடம் "அ1" நோட்டீஸ் 01.10.2021 அன்று பிரசுரம் செய்யப்பட்டதில் ஆட்சேபணை ஏதும் வரப்பெறவில்லை என கிராம நிர்வாக அலுவலர் அறிக்கை செய்துள்ளார்.

4.நான்குமால் விபரம்:-

புல எண். 672/3 (0.23.0)

வடக்கு - புல எண். 672/2 - ரோடு,  
தெற்கு - புல எண். 674, 676/2 - ராமச்சந்திரன்,  
கிழக்கு - புல எண். 673/3 - ருக்குமணி,  
மேற்கு - புல எண். 672/2 - ரோடு,

(X) S. Ravi.

புல எண். 674 (1.20.5):-

வடக்கு - புல எண். 672/3 - ராமச்சந்திரன், 673/3 - ருக்குமணி,  
தெற்கு - வட்சமிபுரம், கங்கர்செவல் கிராமம்,  
கிழக்கு - புல எண். 647/1 - வடவநாயக்கர் (வ),  
மேற்கு - புல எண். 676/3, 675/2 - ராமச்சந்திரன், 675/1 - துரைப்பாண்டி (வ),

புல எண். 675/2 (0.41.5):-

வடக்கு - புல எண். 675/1 - துரைப்பாண்டி (வ),  
தெற்கு - கங்கர்செவல் கிராமம்,  
கிழக்கு - புல எண். 674 - ராமச்சந்திரன்,  
மேற்கு - புல எண். 677/3C - மங்கத்தாய் (வ),

புல எண். 676/6 (0.43.0):-

வடக்கு - புல எண். 672/1, 672/3 - துரைப்பாண்டி (வ), 672/2 - ரோடு,  
தெற்கு - புல எண். 675/1 - துரைப்பாண்டி,  
கிழக்கு - புல எண். 674 - ராமச்சந்திரன்,  
மேற்கு - புல எண். 677/1, 677/3B - மங்கத்தாய் (வ), 677/2 - வண்டிப்பாதை,

2.நில அமைப்பு:-

மனுதாரர் குவாரி உரிமம் புலத்திற்கு 300 மீ சுற்றளவில் குடியிருப்பு பகுதிகள், பள்ளி மற்றும் கல்லூரிகள் எதுவும் கிடையாது. மேலும் 500 மீ சுற்றளவிற்குள் புல எண். 673 இல் க.ராமச்சந்திரன் என்பவருக்கு சொந்தமான குவாரி 2003-2008 வரை 5 ஆண்டுகள் செயல்பட்டு, 2008 முதல் தற்போது வரை செயல்படாமல் உள்ளது. மேற்கே புல எண். 683 இல் தனியாருக்குச் சொந்தமான குவாரி 4 ஆண்டுகளாக செயல்படாத நிலையில் உள்ளது. வடபக்கம் புல எண். 648 இல் அரசுக்கு சொந்தமான குவாரி செயல்படாத நிலையில் உள்ளது.

மேற்படி குவாரி அமைக்கக் கோரும் புலங்களுக்கு 50 மீட்டர் சுற்றளவில் சாலைகள், இரயில் இருப்பு பாதைகள், கோவில்கள் மற்றும் புராதானச் சின்னங்கள், மின்கம்பிகள், நீர்நிலை ஆதாரங்கள், வேறு நிரந்தர அமைப்புகள் ஏதும் கிடையாது. மேற்படி உடைகல் மற்றும் கிராவல் குவாரி நடத்துவதால் அருகிலுள்ள விவசாயம் மற்றும் பட்டா நிலங்களுக்கு பாதிப்பு ஏதும் இல்லை.

எனவே, வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர் பரப்பு நிலத்தில் திரு.ராமச்சந்திரன், த/பெ. சுந்தர்ரெட்டியார் என்பவருக்கு தமிழ்நாடு சிறுகனிமவிதிகளுக்கு உட்பட்டு 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க பரிந்துரை செய்கிறேன். இத்துடன் புலத்தணிக்கை அறிக்கை, கிராம கணக்கு ஆவணங்களின் நகல், 10(1) , புலப்படச்சுவடி நகல், கிராம வரைபடம், "அ1" நோட்டீஸ் ஆகியவைகளை இணைத்து அனுப்பியுள்ளேன் என்பதைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு: மேற்கண்டவாறு.

/உத்தரவுப்புடி/

(X) S. Ravi

ஓம்/ரா.புஷ்பா,  
வருவாய் கோட்டாட்சியர்,  
சாத்தூர்

நேர்முக உதவியாளர்

3.11.2022

அனுப்புநர்

திரு.சு.குளராஜ்,  
வருவாய் வட்டாட்சியர்,  
வெம்பக்கோட்டை.

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பெறுநர்

மாவட்ட ஆட்சியர்,  
விருதுநகர் மாவட்டம்,  
புவியியல் & சுரங்கத்துறை  
விருதுநகர்.

உரிய வழிமுறையாக  
வருவாய் கோட்டாட்சியர்,  
சாத்தூர்.

ந.க.அ6/2154/2021, நாள்:31.12.2021



பார்வை-

கனிமம் மற்றும் சுரங்கம் - விருதுநகர் மாவட்டம் - வெம்பக்கோட்டை வட்டம் - எதிர்க்கோட்டை கிராமம் - புல எண்கள்.672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது - கருத்துரு அனுப்பக் கோரியது - அறிக்கை அனுப்புதல் -தொடர்பாக.

1. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, விருதுநகர் கடிதம் ந.க.கே.வி1/664/2021 நாள்:15.09.2021.
2. சாத்தூர் வருவாய் கோட்டாட்சியர் அவர்களின் கடிதம் எண்.ந.க.அ2/4675/2021.நாள்:27.09.2021.
3. எதிர்க்கோட்டை கிராம நிர்வாக அலுவலர், அறிக்கை. நாள்:18.10.2021.
4. ஆலங்குளம் வருவாய் ஆய்வாளர், அறிக்கை. நாள்:20.10.2021.
5. வெம்பக்கோட்டை, சார் ஆய்வாளர் அறிக்கை. நாள்:20.10.2021.
6. மண்டல துணை வட்டாட்சியர் அறிக்கை. நாள்:11.11.2021.

விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள்.672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரி திரு.ராமச்சந்திரன் த/பெ.சுந்தர் ரெட்டியார் என்பவர் விண்ணப்பம் செய்துள்ளது தொடர்பாக மனுதாரர் கோரிக்கை தொடர்பாக, 20.12.2021 அன்று புலத்தணிக்கை செய்து எனதறிக்கையினை கீழ்க்கண்டவாறு சமர்ப்பிக்கிறேன்.

(X) S. Rautam.



1.நில உரிமை:

மனுதாரர் குவாரி செய்ய உரிமம் வழங்கக் கோரும் இடம் வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள்.672/3 (0.23.0), 675/2 (0.41.5) ஆகியவை பட்டா எண்.388 ராமச்சந்திரன் என்பவர் பெயரிலும், புல எண்.674 (1.20.5) ஆனது பட்டா எண்.1318, புல எண்.676/3 (0.43.0) பட்டா எண்.611-ல் சுந்தரரெட்டியார் மகன் ராமச்சந்திரன் பெயரில் கிராமக் கணக்கில் கூட்டாக தாக்கலாகியுள்ளது.

2. நில அமைப்பு:

மனுதாரர் குவாரி உரிமம் புலத்திற்கு 300 மீ சுற்றளவில் குடியிருப்பு பகுதிகள், பள்ளி மற்றும் கல்லூரிகள் எதுவும் கிடையாது. மேலும் 500மீ சுற்றளவிற்குள் புல எண்.673-ல் க.ராமச்சந்திரன் என்பவருக்கு சொந்தமான குவாரி 2003-2008 வரை 5 ஆண்டுகள் செயல்பட்டு, 2008 முதல் தற்போது வரை செயல்படாமல் உள்ளது. மேற்கே புல எண்.683-ல் தனியருக்குச் சொந்தமான குவாரி 4 ஆண்டுகளாக செயல்படாத நிலையில் உள்ளது. வடபக்கம் புல எண்.648-ல் அரசுக்கு சொந்தமான குவாரி செயல்படாத நிலையில் உள்ளது.

மேற்படி குவாரி அமைக்கக் கோரும் புலங்களுக்கு 50 மீட்டர் சுற்றளவில் சாலைகள், இரயில் இருப்பு பாதைகள், கோவில்கள் மற்றும் புராதனச் சின்னங்கள், மின்கம்பிகள், நீர் நிலை ஆதாரங்கள், வேறு நிரந்தர அமைப்புகள் ஏதும் கிடையாது. மேற்படி உடைகல் மற்றும் கிராவல் குவாரி செய்வதால் அருகிலுள்ள விவசாய மற்றும் பட்டா நிலங்களுக்கு பாதிப்பு ஏதும் இல்லை

4.ஆட்சேபனை:

மேற்படி குவாரி அமைவது குறித்து கோபாலபுரம் கிராமப் பொது மக்களிடம் "A1" நோட்டீஸ் 01.10.2021 அன்று பிரசுரம் செய்யப்பட்டதில் ஆட்சேபனை ஏதும் வரப்பெறவில்லை.

5. நான்குமால் விபரம்:

புல எண்:672/3 (0.23.0):

வடக்கு - புல எண்.672/2 - ரோடு

தெற்கு - புல எண்.674, 676/2-ராமச்சந்திரன்

கிழக்கு - புல எண்.673/3 - ருக்குமணி

மேற்கு - புல எண்.672/2- ரோடு

(X) S. Raman



புல எண்:674 (1.20.5):

வடக்கு - புல எண்.672/3 - ராமச்சந்திரன்,  
673/3 - ருக்குமணி

தெற்கு - புல எண்.லட்சுமிபுரம், கங்கர்செவல் கிராமம்.

கிழக்கு - புல எண்.647/1-வடவ நாயக்கர்(வ)

மேற்கு - புல எண்.676/3, 675/2-ராமச்சந்திரன்  
புல எண்.675/1 துரைப்பாண்டி (வ).

புல எண்:675/2 (0.41.5):

வடக்கு - புல எண்.675/1-துரைப்பாண்டி(வ).

தெற்கு - புல எண்.கங்கர்செவல் கிராமம்

கிழக்கு - புல எண்.674 - ராமச்சந்திரன்

மேற்கு - புல எண்.677/3C -மங்கத்தாய்(வ).

புல எண்:676/3 (0.43.0):

வடக்கு - புல எண்.672/1, 672/3 - ராமச்சந்திரன்  
672/2- ரோடு /

தெற்கு - புல எண்.675/1 - துரைப்பாண்டி

கிழக்கு - புல எண்.674-ராமச்சந்திரன்

மேற்கு - புல எண்.677/1, 677/3B - மங்கத்தாய்(வ)  
புல எண்.677/2 - வண்டிப்பாதை

6.பரிந்துரை:

மனுதாரர் சமர்ப்பித்துள்ள ஆவணங்களின்படியும், சம்பந்தப்பட்ட கிராம நிர்வாக அலுவலர், வருவாய் ஆய்வாளர், சார் ஆய்வாளர் மற்றும் வெம்பக்கோட்டை மண்டல துணை வட்டாட்சியரின் பரிந்துரையின்பேரிலும், புலத்தணிக்கையின் அடிப்படையிலும், திரு.ராமச்சந்திரன் த/பெ.சுந்தர்ரெட்டியார் என்பவருக்கு புல எண்கள்.672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமை வழங்க பரிந்துரை செய்கிறேன் என்பதை பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு : தொடர்புடைய ஆவணங்கள்.

-/உத்தரவுப்படி/-

ஒ.ம்/-ச.துனராஜ்,  
வட்டாட்சியர்,  
வெம்பக்கோட்டை.

வட்டாட்சியருக்காக.

(X) S. Rantey

21/2/22



**புலத்தணிக்கைக்குறிப்பு**

புலத்தணிக்கை அலுவலர் பெயர் மற்றும் பதவி	திருமதி.ரா.புஷ்பா, வருவாய் கோட்டாட்சியர், சாத்தூர்.
தணிக்கை செய்த இடம்	வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம்
புல எண்கள்	புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர்
தணிக்கை நாள்	29.01.2022
புலத்தணிக்கையின் நோக்கம்	10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியது - தொடர்பாக.

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விருதுநகர் மாவட்டம், வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரி திரு.ராமச்சந்திரன், த/பெ. சுந்தர்ரெட்டியார் என்பவர் மனு செய்துள்ளது தொடர்பாக, இன்று (29.01.2022) புலத்தணிக்கை செய்யப்பட்டது. புலத்தணிக்கையின்போது வருவாய் வட்டாட்சியர், மண்டல துணை வட்டாட்சியர், குறுவட்ட ஆய்வாளர், குறுவட்ட அளவார் மற்றும் கிராம நிர்வாக அலுவலர் ஆகியோர் உடனிருந்தனர்.

**நில உரிமை:-**

மனுதாரர் குவாரி செய்ய உரிமம் வழங்கக் கோரும் இடம் வெம்பக்கோட்டை வட்டம், எதிர்க்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 675/2 (0.41.5) ஆகியவை பட்டா எண். 388 - ராமச்சந்திரன் என்பவர் பெயரிலும், புல எண். 674 (1.20.5) ஆனது பட்டா எண். 1318, புல எண். 676/3 (0.43.0) பட்டா எண். 611 இல் சுந்தர்ரெட்டியார் மகன் ராமச்சந்திரன் பெயரில் கிராமக் கணக்கில் தாக்கலாகியுள்ளது.

**ஆட்சேபணை:-**

மேற்படி குவாரி அமைவது குறித்து கோபாலபுரம் கிராமப் பொது மக்களிடம் "அ1" நோட்டீஸ் 01.10.2021 அன்று பிரசுரம் செய்யப்பட்டதில் ஆட்சேபணை ஏதும் வரப்பெறவில்லை என கிராம நிர்வாக அலுவலர் அறிக்கை செய்துள்ளார்.

**4.நான்குமால் விபரம்:-**

**புல எண். 672/3 (0.23.0)**

வடக்கு - புல எண். 672/2 - ரோடு,  
தெற்கு - புல எண். 674, 676/2 - ராமச்சந்திரன்,  
கிழக்கு - புல எண். 673/3 - ருக்குமணி,  
மேற்கு - புல எண். 672/2 - ரோடு,



புல எண். 674 (1.20.5):-

வடக்கு - புல எண். 672/3 - ராமச்சந்திரன், 673/3 - ருக்குமணி,  
தெற்கு - லட்சுமிபிரம், கங்கர்செவல் கிராமம்,  
கிழக்கு - புல எண். 647/1 - வடவநாயக்கர் (வ),  
மேற்கு - புல எண். 676/3, 675/2 - ராமச்சந்திரன், 675/1 - துரைப்பாண்டி (வ),

புல எண். 675/2 (0.41.5):-

வடக்கு - புல எண். 675/1 - துரைப்பாண்டி (வ),  
தெற்கு - கங்கர்செவல் கிராமம்,  
கிழக்கு - புல எண். 674 - ராமச்சந்திரன்,  
மேற்கு - புல எண். 677/3C - மங்கத்தாய் (வ),

புல எண். 676/6 (0.43.0):-

வடக்கு - புல எண். 672/1, 672/3 - துரைப்பாண்டி (வ), 672/2 - ரோடு,  
தெற்கு - புல எண். 675/1 - துரைப்பாண்டி,  
கிழக்கு - புல எண். 674 - ராமச்சந்திரன்,  
மேற்கு - புல எண். 677/1, 677/3B - மங்கத்தாய் (வ), 677/2 - வண்டிப்பாதை,

2. நில அமைப்பு:-

மனுதாரர் குவாரி உரிமம் புலத்திற்கு 300 மீ சுற்றளவில் குடியிருப்பு பகுதிகள், பள்ளி மற்றும் கல்லூரிகள் எதுவும் கிடையாது. மேலும் 500 மீ சுற்றளவிற்குள் புல எண். 673 இல் க.ராமச்சந்திரன் என்பவருக்கு சொந்தமான குவாரி 2003-2008 வரை 5 ஆண்டுகள் செயல்பட்டு, 2008 முதல் தற்போது வரை செயல்படாமல் உள்ளது. மேற்கே புல எண். 683 இல் தனியாருக்குச் சொந்தமான குவாரி 4 ஆண்டுகளாக செயல்படாத நிலையில் உள்ளது. வடபக்கம் புல எண். 648 இல் அரகக்கு சொந்தமான குவாரி செயல்படாத நிலையில் உள்ளது.

மேற்படி குவாரி அமைக்கக் கோரும் புலங்களுக்கு 50 மீட்டர் சுற்றளவில் சாலைகள், இரயில் இருப்பு பாதைகள், கோவில்கள் மற்றும் புராதானச் சின்னங்கள், மின்கம்பிகள், நீர்நிலை ஆதாரங்கள், வேறு நிரந்தர அமைப்புகள் ஏதும் கிடையாது. மேற்படி உடைகல் மற்றும் கிராவல் குவாரி நடத்துவதால் அருகிலுள்ள விவசாயம் மற்றும் பட்டா நிலங்களுக்கு பாதிப்பு ஏதும் இல்லை.

எனவே, வெம்பக்கோட்டை வட்டம், எதிர்கோட்டை கிராமம், புல எண்கள். 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) மற்றும் 676/3 (0.43.0) மொத்தம் 2.28.0 ஹெக்டேர் மரப்பு நிலத்தில் திரு.ராமச்சந்திரன், த/பெ சுந்தர்ரெட்டியார் என்பவருக்கு தமிழ்நாடு சிறுகனிமவிதிகளுக்கு உட்பட்டு 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க வழங்க மாவட்ட ஆட்சியர் அவர்களுக்கு கடித வரைவு அனுப்பலாம்.

வருவாய் கோட்டாட்சியர்,  
சாத்தூர்.

(X) டி. சுவாமிநாதன்



**விருதுநகர் மாவட்டம் வெம்பக்கோட்டை வருவாய் வட்டாட்சியரின்  
புலத்தணிக்கை அறிக்கை**



1.	குத்தகை உரிமம் கோரிய விண்ணப்பம் பெறப்பட்ட தேதி	:	08.09.2021.				
2.	அ) புலத்தணிக்கை செய்த நாள்	:	20.12.2021.				
	ஆ) புலத்தணிக்கையின் போது உடனிருந்த அலுவலர்கள் பற்றிய விவரம்	:	எதிர்க்கோட்டை கிராம நிர்வாக அலுவலர் மற்றும் ஆலங்குளம் வருவாய் ஆய்வாளர்.				
3.	குத்தகை உரிமம் கோரும் விண்ணப்பதாரரின் பெயர் மற்றும் முகவரி	:	திரு.ராமச்சந்திரன், த/பெ.சுந்தரரெட்டியார், இ.டி.ரெட்டியப்பட்டி, எதிர்க்கோட்டை (அஞ்சல்).				
4.	குத்தகை உரிமம் கோரும் கனிமங்களின் பெயர்	:	உடைகல், கிராவல்				
5.	குத்தகை உரிமம் கோரும் கால அளவு	:	10 (பத்து ஆண்டுகள்)				
6.	குத்தகை உரிமம் கோரும் இடம் அமைந்துள்ளது பற்றிய விவரம்	:					
வ. எண்	வட்டம்	கிராமம்	புல எண்கள்	மொத்த பரப்பு (ஹெக்)	குத்தகை உரிமம் கோரும் பரப்பு (ஹெக்)	வகைப்பாடு	
1	வெம்பக்கோட்டை	எதிர்க்கோட்டை	672/3 674 675/2 676/3	(0.23.0) (1.20.5) (0.41.5) (0.43.0)	2.28.0	பட்டா நிலம்	
			<b>மொத்தம்</b>	<b>2.28.0</b>	<b>2.28.0</b>		
7.	அ) குத்தகை உரிமம் கோரும் புல எண்கள், விண்ணப்பதாரரின் பெயரில் பட்டா நிலங்களாக இருப்பின் அது பற்றிய விவரம்	:	எதிர்க்கோட்டை கிராமம் பட்டா எண். 388 ராமச்சந்திரன், பட்டா எண்.1318 மற்றும் 611 ஆனது சுந்தரரெட்டியார் மகன் ராமச்சந்திரன் ஆகியோர் பெயரில் கூட்டாக கிராமக் கணக்கில் தாக்கலாகியுள்ளது.				
	ஆ) பட்டாதாரரிடமிருந்து குத்தகை ஒப்பந்தம் பெறப்பட்டிருப்பின் அதுபற்றிய விவரம்	:	இல்லை.				
	இ) குத்தகை கோரும் புல எண்கள் தாழ்த்தப்பட்டோர் / பழங்குடியினருக்கு ஒதுக்கீட்டின் அடிப்படையில் பட்டா வழங்கப்பட்டிருப்பின் அதுபற்றிய விவரம்	:	இல்லை.				
8.	குத்தகை உரிமம் கோரும் புல எண்களின் நான்கு எல்லைகள்.	:	புல எண்	வடக்கு	தெற்கு	கிழக்கு	மேற்கு
			672/3	672/2	674, 676/2	673/3	672/2
			674	672/3, 673/3	லட்சுமிபுரம், கங்கர்செவல்	647/1	676/3, 675/2, 675/1

(X) டி. சுவாமிநாதன்

		675/2 676/3	675/1 672/1 672/2 672/3	கங்கர்செவல் 675/1	674 674	677/3C 677/1 677/2 677/3B
9.	குத்தகை உரிமம் கோரும் புல எண்களுக்கு ஏற்கனவே குத்தகை உரிமம் வழங்கப்பட்டிருப்பின் அது பற்றிய விவரம்.	:	இல்லை.			
10.	குத்தகை உரிமம் கோரும் புல எண்களுக்கு அருகில் பாதுகாப்பு இடை வெளிக்குள் அமைந்துள்ள நிரந்தர அமைப்புகள் ஒதுக்கப்பட வேண்டிய பாதுகாப்பு இடைவெளி பற்றிய விவரம்	:	மேற்படி புல எண்களுக்கு அருகில் உள்ள பட்டா நிலங்களுக்கு, ஓடைகளுக்கு போதிய பாதுகாப்பு இடைவெளி விட வேண்டும்.			
11.	அ) குத்தகை உரிமம் கோரும் புல எண்களிலிருந்து 300 மீட்டர் சுற்றளவுக்குள் குடியிருப்பு பகுதிகள்/ அங்கீகரிக்கப்பட்ட வீட்டுமனைப்பிரிவுகள் மற்றும் புராதனச் சின்னங்கள் அமைந்துள்ள விவரம்	:	300 மீட்டர் சுற்றளவுக்குள் குடியிருப்பு பகுதிகள் / அங்கீகரிக்கப்பட்ட வீட்டுமனைப் பிரிவுகள் மற்றும் புராதனச் சின்னங்கள் ஏதும் இல்லை.			
	ஆ) குத்தகை உரிமம் கோரும் பகுதிக்கு பாதை வசதி உள்ளது பற்றிய விவரம்	:	பாதை வசதி உள்ளது.			
12.	குத்தகை உரிமம் கோரும் புல எண்கள் அமைந்துள்ள கிராமம், மலையிடை பாதுகாப்பு குழுமத்தின் கீழ் வருவது மற்றும் தடையில்லா சான்று பெற வேண்டியது பற்றிய விவரம்	:	-இல்லை-			
13.	குத்தகை உரிமம் கோரும் பகுதி வளவிலங்கு சரணாலயத்திலிருந்து அமைந்துள்ள தூரம், பெறப்பட வேண்டிய தடையில்லா சான்று பற்றிய விவரம்.	:	-இல்லை-			
14.	குத்தகை கோரும் புலஎண்களில் தகுந்த அனுமதியின்றி ஏற்கனவே கனிமங்கள் எடுக்கப்பட்டு அபராதம் விதிக்கப்பட்டிருப்பின் அது பற்றிய விவரம்.	:	-இல்லை-			
15.	அ) குத்தகை உரிமம் கோரும் புலங்களின் பேரில் நிலம் கையகப்படுத்தும் நடவடிக்கைகள் இருப்பின் அது பற்றிய விவரம்.	:	-இல்லை-			
	ஆ) குத்தகை உரிமம் கோரும் புல எண்களின் பேரில் நீதிமன்றத்தில் வழக்குகள் இருப்பின் அதுபற்றிய விவரம்.	:	-இல்லை-			

(4) S. Rawat

16.	கிராம நிர்வாக அலுவலரின் வாக்குமூலம் பெறப்பட்டுள்ளதா?	: கிராம நிர்வாக அலுவலர் வாக்குமூலம் அளித்துள்ளார்.
17.	குத்தகை உரிமம் வழங்குவது தொடர்பாக "அ1" நோட்டீஸ் விளம்பரம் செய்யப்பட்டு பொது மக்களிடமிருந்து ஆட்சேபனை ஏதும் பெறப்பட்டுள்ளதா?	: "அ1" நோட்டீஸ் விளம்பரம் 01.10.2021 அன்று பிரசுரம் செய்யப்பட்டு ஆட்சேபனைகள் ஏதும் பெறப்படவில்லை.
18.	குத்தகை உரிமம் கோரும் புல எண்களின் பேரில் வருவாய்துறை பரிந்துரை செய்கின்றதா?	: ஆம்

**19) குத்தகை உரிமம் கோரும் விண்ணப்பத்தின் பேரில் வெட்பக்கோட்டை வருவாய் வட்டாட்சியரின் அறிக்கையும் பரிந்துரையும்.**

திருராமச்சந்திரன் த/பெசுந்தர் ரெட்டியார் என்பவர் விண்ணப்பித்துள்ள புல எண்கள் பட்டா நிலங்கள் என்ற அடிப்படையிலும் எதிர்க்கோட்டை கிராம நிர்வாக அலுவலர் மற்றும் ஆலங்குளம் குறுவட்ட வருவாய் ஆய்வாளர் ஆகியோர் மனுதாரர் நிறுவனத்திற்கு குத்தகை உரிமம் வழங்க பரிந்துரை செய்துள்ளதன் அடிப்படையிலும், மனுதாரர் நிறுவனத்தாருக்கு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959, விதி 19 மற்றும் 20-ன் கீழ் கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு பத்தாண்டுகளுக்கு குத்தகை உரிமம் வழங்கலாம்.

- 1) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5% பாதுகாப்பு இடைவெளி விட வேண்டும்.
- 2) புல எண்களுக்கு அருகில் உள்ள குவாரிகளுக்கு போதிய பாதுகாப்பு தூரம் விட வேண்டும்.
- 3) குவாரி சுழிவுகளை குத்தகை உரிமம் வழங்கப்படும் பகுதிக்கு உள்ளேயே இருப்பு வைக்க
- 4) வேண்டும்.

வெடிமருந்தினை விதிகளின் படி பாதிப்பு ஏற்படா வண்ணம் பயன்படுத்த வேண்டும்.

- 5) சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.

வருவாய் வட்டாட்சியர்,  
வெட்பக்கோட்டை

(X) ச. சுவாமிநாதன்

பாளையம்: ஓய்வூதியப் பங்காளிகளின் பட்டியல்

தேய்வாண்மைத் துறை  
நாள். 30.9.21



ஓய்வூதியப் பங்காளிகளின் பட்டியல்  
கிராமம், பட்டகம் E.T. ஓய்வூதியப் பங்காளிகள் க.எ.1/20  
என்ற சூசனத்தில் வகுத்துவரும் து. நாமச்சந்திரன்  
த/95. சந்திரன் ஓய்வூதியர் என்.என். எதிர்க்கோட்டை  
கிராமம், பட்டக எண். 388, 1318 மற்றும் 611-ல்  
உள்ள கட்டத்தில் 10 வகுப்புகளுக்கு 2003 மற்றும்  
கிராமம் குவார்டி 2-ம் ஆம் வகுப்புகளில் உள்ள  
மேற்படி கட்டத்தை முதல்தரத்திற்கு ஒதுக்கீடு  
அளிக்க சம்பந்தம் இருக்கிறது.

மாவட்டம் து. நாமச்சந்திரன், த/95.  
சந்திரன் ஓய்வூதியர் என்.என். எதிர்க்கோட்டை  
கிராமம் பட்டக எண். 388, 4வது எண். 672/3 (0.23.0)  
4வது எண். 675/2 (0.41.5), பட்டக எண். 1318, 4வது எண்.  
(1.20.5) மற்றும் பட்டக எண். 611, 4வது எண். 676/3  
(0.43.0) ஆக 9 வகுப்புகள் 2.28.0 ஒதுக்கீடு  
சந்திரன் ஓய்வூதியர் 10வது நாமச்சந்திரன்  
என்.என். உபயோக கிராமங்களில் சந்திரன்  
மற்றும் குவார்டி 4வது எண். 673-ல் 2003-2008 ஆம் ஆண்டில்  
மேற்படி குவார்டி அமைதி உள்ள கட்டத்தை  
முதல்தரத்திற்கு ஒதுக்கீட்டில் 300 மீட்டர்  
சந்திரன் 2வது குவார்டி பகுதிகள், பள்ளி  
மற்றும் குவார்டிக்கு ஒதுக்கீடு. 500 மீட்டர்  
சந்திரன், 4வது எண். 673-ல் ச. நாமச்சந்திரன்  
என்.என்.க்கு ஒதுக்கீடு  
உள்ளது. கட்ட குவார்டி 2003-2008 ஆம் ஆண்டில்  
ஒதுக்கீடு செய்த சந்திரன், 2008-க்கு வந்த  
சந்திரன் ஆம் ஆண்டில் உள்ளது.  
4வது எண். 673-ல் மேற்படி பகுதியில் சந்திரன்  
ஒதுக்கீடு குவார்டி ஒதுக்கீடு செய்த சந்திரன்  
கட்ட 4 வகுப்புகளில் ஒதுக்கீடு உள்ளது.

ச. சந்திரன்



11

1. 648-ல் 4வது எண். 648-ல் குவாபி அமைச்சு 2-ம்  
கட்டத்தில் வடக்கே அருகில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்

2. குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்

3. 672-ல் 2வது எண். 672-ல் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்

4. 672/2 (0.03.0) 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்

5. 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5)  
676/3 (0.43.0) 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்  
குவாபி அமைச்சு 2-ம் கட்டத்தில் குவாபி அமைச்சு 2-ம்

6. 2-28.0 2-28.0 2-28.0 2-28.0 2-28.0 2-28.0 2-28.0  
2-28.0 2-28.0 2-28.0 2-28.0 2-28.0 2-28.0 2-28.0  
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ZONAL DEPUTY TAHSILDAR  
VEMBAKKOTTAI

(X) P. Parthiban

Պատվական արձույթի մատչելիության մասին

Պատվական արձույթի մատչելիության մասին



Առարկա: 1. Պատվական արձույթի մատչելիության մասին

Ռ.Ձ. 22/4675/2021 Որոշում: 15-27.09-2021

2. Պատվական արձույթի մատչելիության մասին

243 Օրոշում: Ռ.Ձ. 26/2154/2021

Որոշում: 30.09.2021

Չի կատարվում պարզապես Պատվական արձույթի

մատչելիության հարցի լուծումը: Ե.Ի. Օրվա 1/28  
Օրվա մատչելիության հարցի մասին ընդհանուր կարգի մասին  
Օրվա մատչելիության հարցի մասին կարգի մասին 672/3-0-23-0, 674-1-  
675/2-0-41-5, 676/3-0-42-0 թվով 2.28-0 Օրվա  
կարգի մասին և 25-11-16-0 Օրվա մասին 26-0  
Հարցի մասին և հարցի մասին մասին մասին  
Օրվա մատչելիության մասին կարգի մասին  
կարգի մասին կարգի մասին Օրվա մասին

Հարցի մասին կարգի մասին Օրվա մասին  
կարգի մասին կարգի մասին 388 օրվա 1318, 611 և  
հարցի մասին կարգի մասին Օրվա մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին  
հարցի մասին կարգի մասին կարգի մասին

( 15.09.2021 ) 147









தூத்துக்குடி கிராமம்

விடுதலைப் போராட்டம், வெப்பக் கோட்டை வட்டம், தூத்துக்குடி கிராமம் புறநகர் 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5) லாங்ஷேட் 676/3 (0.43.0) மொத்தம் 2.28.0 ஏக்கர்கள் பற்றிய நிலத்தில் 10 உட்கட்டுகளுக்கு உட்பட லாங்ஷேட் இலாபி பண ரகசிய அலுவலர் கோரிய புறநகர் 672/3 தூத்துக்குடி கிராமம் கிராம நிர்வாக அலுவலர் உட்கட்டுகளை நிறைவேற்றும் தீர்மானம்.

உட்கட்டு - புறநகர் 671, இலாபி பண ; 673/3 - (நகர்)

நிறைவேற்றம் - கிராம நிர்வாக அலுவலர் கிராமம்

புறநகர் - புறநகர் 647/1, உட்கட்டுகளை (உ)

பேரணி - 677/1, 677/3C - மக்களவை (உ)

புறநகர் 672/2 - பேரணி

புறநகர் 683 - கட்டுப்பாடு

*(Handwritten Signature)*  
கிராம நிர்வாக அலுவலர்  
எதிர்க்கேள்விகள் கிராமம்  
வெப்பக்கோட்டை வட்டம்

*(Handwritten Signature)*



நாண்டிமணி விபரம்

விடுதலைப் போராட்டம், வெய்ல்க்காட்டை உடம்பம், எழும்பட்டை கிராமம் 4N எண்கள் 672/3 (0.23.0), 674 (1.20.5), 675/2 (0.41.5). மன்றம் 674/3 (0.43.0) ரிமாத்ரீ 2.28.0 ரெய்க்டீர் மரீய சிந்தனை 10 உடம்பம்-காந்தி உடைகள் மன்றம் கிராமம் குயாசி உள்மம் ஒரிண்ணாபீயி ரெய்க்டீர்மது ரெய்க்டீர்மது ரெய்க்டீர்மது 4N எண்கள் 672/3 நாண்டிமணி விபரமாத கீழ்க்கண்டவாறு உள்மது ரெய்க்டீர்மது மணிபுலம் ரெய்க்டீர்மது ரெய்க்டீர்மது.

① 4N எண் 672/3 விபரமாத 0.23.0 ரெய்க்டீர்  
நாண்டிமணி விபரம்

- உடம்பம் - 4N எண் 672/2 - ரெய்க்டீர்
- ரெய்க்டீர் - 4N எண் 674 - ரெய்க்டீர், 676/2 - ரெய்க்டீர்
- கீழ்க்டீர் - 4N எண் 673/3 - ரெய்க்டீர்
- ரெய்க்டீர் - 4N எண் 672/2 - ரெய்க்டீர்

② 4N எண் 674 (1.20.5) ரெய்க்டீர் நாண்டிமணி

- உடம்பம் - 4N எண் 672/3 - ரெய்க்டீர்
- 4N எண் 673/3 - ரெய்க்டீர்
- ரெய்க்டீர் - உடம்பம், காந்தி ரெய்க்டீர் கிராமம்
- கீழ்க்டீர் - 4N எண் 647/1 - உடம்பம் நாண்டிமணி (2)
- ரெய்க்டீர் - 676/3, 675/2 - ரெய்க்டீர்
- 4N எண் 675/1 - ரெய்க்டீர் (2)

(X) P. Ramani

3) 4N எண் 675/2 பரப்பு 0.41.5 ஏக்கர்க்கு பூண்டு மண்

உட்கட்டு - 4N எண் 675/1 - துறைமுகத்தின் (2)

பெருக்கு - காவிரி மீது கிராமம்

கிழக்கு - 4N எண் 674 - ராமச்சந்திரன்

பெருக்கு - 4N எண் 677/3C - மங்கத்தாய் (2)

4) 4N எண் 676/3 பரப்பு 0.43.0 ஏக்கர்க்கு பூண்டு மண்

உட்கட்டு - 4N எண் 672/1 - சி. ராமச்சந்திரன்

4N எண் 672/2 - பேரணி

4N எண் 672/3 - சி. ராமச்சந்திரன்

பெருக்கு - 4N எண் 675/1 - துறைமுகத்தின் (2)

கிழக்கு - 4N எண் 674 - சி. ராமச்சந்திரன்

பெருக்கு - 4N எண் 677/1 - மங்கத்தாய் (2)

4N எண் 677/2 - உண்பிப்பாளன்

4N எண் 677/3B - மங்கத்தாய் (2)

சென்னை  
18/10/2024  
மாண்புமிகு கிராம  
எதிர்க்கட்சி அமைச்சர்  
மாண்புமிகு கிராம  
மேம்பாட்டுத்துறை அமைச்சர்

(X) S. Ramalingam



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മക്കിൻ്റെ ജോലിയിൽ മാറ്റം വരുത്തൽ.



മുൻകരുതി പറയുക,

ഗവൺമെന്റ് കോളേജ് കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ,  
674-1-20-5, 675/2 - 0.41-5, 676/3- 0.43-0

അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
E.T. റെഗുലേഷൻ പ്രകാരം തിരഞ്ഞെടുക്കപ്പെട്ട സെക്രട്ടറി  
മാർക്ക് അനുബന്ധമായി സെക്രട്ടറി 10 മുൻകരുതി  
മാർക്ക് അനുബന്ധമായി സെക്രട്ടറി 10 മുൻകരുതി  
മാർക്ക് അനുബന്ധമായി സെക്രട്ടറി 10 മുൻകരുതി  
മാർക്ക് അനുബന്ധമായി സെക്രട്ടറി 10 മുൻകരുതി  
മാർക്ക് അനുബന്ധമായി സെക്രട്ടറി 10 മുൻകരുതി

14/2

ഗവൺമെന്റ് കോളേജ് കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ 672/3,

674, 675/2, 676/3 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി  
ഹെൽത്ത് സെന്റർ 611 4 1318 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി  
ഹെൽത്ത് സെന്റർ 611 4 1318 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി  
ഹെൽത്ത് സെന്റർ 611 4 1318 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി  
ഹെൽത്ത് സെന്റർ 611 4 1318 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി  
ഹെൽത്ത് സെന്റർ 611 4 1318 അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി

520 മുൻകരുതി അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
673-ൽ അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
673-ൽ അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
673-ൽ അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
673-ൽ അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
673-ൽ അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ

അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ

അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
670, 673, 674, 675, 676 മുൻകരുതി  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
670, 673, 674, 675, 676 മുൻകരുതി  
അതിൽ ഉൾപ്പെടെയുള്ള കമ്മ്യൂണിറ്റി ഹെൽത്ത് സെന്റർ  
670, 673, 674, 675, 676 മുൻകരുതി

(X) S. Paul

Dr. ...  
...

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AI நோட்டீஸ்

அரசு புறம்போக்கு / பட்டா நிலத்தில் கனிம உரிமம் (கல், மண், கிராவல், கங்கர் கல், கிராண்டை) செய்து கொள்ளும் விண்ணப்பம் குறித்து ஆட்சேபனை இல்லை என்பதற்கான அறிக்கை

!!!

இதனால் அறிவிக்கப்படுவது என்னவென்றால் திருத்தம் மாவட்டம், வெம்பக்கோட்டை உப

கிராமத்தில் வசித்து வரும் கந்து ஏட்டமுயர் மகன் / மனைவி ராமச்சந்திரன் என்பவர் வெம்பக்கோட்டை மாவட்டம், எதிர்க்கோட்டை கிராமத்தில்

- முக்கோடுசென் லுமையீ கிராமத்தில் (6) க்கு வடக்கிலும்,
- 44 எண்கள் 671, 673/3 க்கு தெற்கிலும்,
- 44 எண்கள் 671/1, 671/2, 671/3C, 683 க்கு கிழக்கிலும்,
- 44 எண் 647/1 க்கு மேற்கிலும்

சர்வே எண் 672/3, 674, 675/2 விஸ்தரணம் 0.00000000 2.28.0 ஹெக்டேர் நிலத்தில் டீண்டல் (டி) குவான் பணி செய்வது தொடர்பாக ஆட்சேபனையுடைய நபர்கள் அதன் விபரத்தை உத்த அறிக்கை பிரசுரித்தம் செய்யப்படும் தேதியிலிருந்து பதினைந்து தினங்கள் கொண்ட கால அளவிற்குள் மேற்படி கிராமத்தின் கிராம நிர்வாக அலுவலர் மற்றும் வட்டாட்சியரிடம் தெரிவிக்க வேண்டும்.

- 1. சி. சிபுன். 5/வ. சிசு சிபு
- 2. V. Senthil Dey s/o Venkatesh Denny கிராம நிர்வாக அலுவலர்
- 3. K. சீதாரம் s/o கந்தசாரம் எதிர்க்கோட்டை கிராமம் வெம்பக்கோட்டை வட்டம்

மேற்படி அறிக்கையானது 01/10/2022 தேதியில் தண்டோரா மூலமாகவும், கிராமச் சாவடி மற்றும் முக்கிய இடங்களிலும் பிரசுரித்தம் செய்யப்பட்டு கையொப்பம் பெறப்பட்டுள்ளது.

சு. கி. சி. சிபுன்  
S. Senthil  
(X) S. Senthil

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P L 7

K. Perumalsamy

மாண்புமிகு உறுப்பினர், தலைவர் அலுவலகம்

த. அமைச்சர் தலைவர் அலுவலகம்

P. Ramasamy S/o S. Perumalsamy

M. Sankar. S/o G. Mukharaj

செய்து கொடுத்தும் ஏதாவது விவரம் தெரிவிக்க வேண்டுகிறேன்

செய்து கொடுத்தும் ஏதாவது விவரம் தெரிவிக்க வேண்டுகிறேன்

(X) S. Ramdas



எண்: 6089  
நாள்: 3.10.2003

S. சமீரன்செட்டி  
E.T. ரெட்டிபட்டி

*[Handwritten signature]*

S. சமீரன்செட்டி  
சென்னை மாநகராட்சி நிர்வாகம்  
கட்டிடத் துறை  
L No. 1422/11/03

APPENDIX - IV

(See Rule 19, 20 & 22 of the Tamil Nadu Minor Minerals Concession Rules, 1959)  
FORM OF AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR  
MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERAL  
BELONG TO GOVERNMENT

&&&&&

Collector's Proceedings No.KV1/2214/03 Dated 3.10.2003

AGREEMENT MADE THIS Third day of November 2003 between  
<sup>Son of Simona Reddiar.</sup>  
Thiru S. Ramachandran, E.T. Reddiapatti, Ethirkottai Post, Sivakasi Taluk, Virudhunagar  
District (herein after referred to as "the registered holder") which term shall include in  
these presents where the context so admits include also his heirs, executors,  
administrators, legal representatives and assigns, on the one part and the Collector of  
Virudhunagar District (here in after called the Government which term shall where the  
context so admits, include his successors in office and assigns) on the other part.

*[Handwritten signature]*  
LESSEE

*[Handwritten signature]*  
LESSOR

(X) *[Handwritten signature]*

1934  
07

சுற்றுலா இயக்குநரகம்  
சென்னை  
பதிவு எண் 1934/07

நேரம் 12:30  
20/7/34

*[Signature]*

சுற்றுலா இயக்குநரகம்

*[Signature]*

PRESENTED IN THE OFFICE OF THE  
SUB REGISTRAR OF KEELARA, KULIA  
RAMAN AND PAID FEE OF Rs. 30/-  
AND BETWEEN THE PARTIES  
ON THE 20/7/34

BOOK 1 DOCUMENT No. 1934  
CONTAINS SHEETS 17  
1st SHEET  
SUB-REGISTRAR.

EXECUTION ADMITTED BY *[Signature]*



LEFT THUMB IMPRESSION



*[Signature]*  
Sundra Reddiar son.  
E. T. Reddiapattai Ethurkottai (P.O.)  
Sivakani (T.T.)

I have Satisfied my Self as to the Execution of the  
Instrument by Thiru. *[Signature]* Dist collector  
Who is Exempted from Personal appearance under  
Section 88 (1) of the Registration Act. NDR

IDENTIFIED BY

சுற்றுலா இயக்குநரகம் சென்னை E.T. சதுரங்கம்  
A.Sivay 40 S. Annachadam 44 RL Nagar Rajabaldra

*[Signature]* 20/7/34  
*[Signature]*  
Subreg

*[Signature]*



WHEREAS the registered holder holds (amongst others) the lands described in the schedule hereunder written (herein after referred to as the said lands)

AND, WHEREAS, the registered holder has made application to the Collector of the District of Virudhunagar (herein after referred to as "The Collector") seeking grant of quarrying lease for quarrying Rough Stone in the said lands and has lodged with the Collector an accurate map or sketch of the said lands.

AND, WHEREAS, the Collector acting for an on behalf of the Government has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for five years in the said lands and to deposit mining waste there on by registered holder.

AND WHEREAS the registered holder has deposited with the Collector the sum of Rs.5,000/- as security against any loss or damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations therein of the registered holder or by the deposit of mining waste thereon by the registered holder.

*S. Ramanathan*  
**LESSEE**

*LS*  
**LESSOR**

(X) *S. Ramanathan*

Registered as No. 1934 of 1903  
of Book I Volume 888 Pages  
123. To 68... 12th Day of

Number 1003 Sub-Registrar

Duplicate: Difference between the original  
and duplicate is Nil. In this  
Duplicate Interlineations, etc is  
Nil.

Compared by Reader: Sr. Ganesan  
Examiner: G. M. M.

Date: 7.11.03

*[Signature]*  
Sub-Registrar

BOOK 1 DOCUMENT No. 1934  
CONTAINS SHEETS 17  
2nd SHEET  
SUB-REGISTRAR.



*[Signature]*



NOW THESE PRESENTS WITNESS AND the registered holder both here by agree with the Government in the manner following that is to say:-

1. The registered holder shall be at liberty at all times during the period of the lease to carry on mining operations for five years in the said lands in a proper and workman like manner and to deposit mining waste on the said lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.

2. The said premises shall be held by the lessee for the term of five years from the Third day of November 2003 to the Second day of November 2008. The registered holder shall pay to the Collector for an on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, scigniorage on the minor minerals viz. Rough Stone at the rate specified in Appendix-II to the Tamilnadu Minor Minerals Concession Rules, 1959.

*S. Ravi*  
LESSEE

*S. Ravi*  
LESSOR

*S. Ravi*



3. The registered holder shall and will keep correct accounts in such form as the Collector shall from time to time required and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and workings in the said lands and shall allow any officer hereunto authorised by the Director of Geology and Mining, Chennai-32 from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such information and returns regarding all or any of the matter aforesaid as the Government shall, from time to time require and direct.

4. The registered holder shall and will at all times, allow any Officer authorised by the Director of Geology and Mining, Tamilnadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

*S. Ramiah*  
**LESSEE**

*LS*  
**LESSOR**

*S. Ramiah*



5. The registered holder shall forthwith sent to the Collector report of any accident which may occur at or in the said lands and also the discovery therein of any minerals other than Rough Stone.

6. It shall be lawful for the registered holder at any time to cease mining operations under these presents provided he shall pay to the Collector, for and on behalf of the Government land assessment, cess and seigniorage due to the government and shall restore the said lands or fence of fill in abandoned pits and excavations therein if required by the Collector and upon his so doing these presents shall cease and determine.

7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereof as the Collector shall require to be restored to as state fit for cultivation or shall securely and permanently fence of fill in all such abandoned pits and excavations there in as the Collector shall require to be so fenced or filled in and in case the registered holder shall fail or neglect to restore to a state fit for cultivation, or to so fence or fill in any such abandoned pit, or excavation

S. Ramalingam  
LESSEE

  
LESSOR

(X) S. Ramalingam

which he shall be required to so fence or fill in them and in such case it shall be lawful for the Collector to so restore any such lands or as the case may be, to so fence or fill in any such pits, or excavation at the expense of the registered holder and to apply the said sum of Rs.5,000/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands, which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to Civil Court.

8. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the proceeding clause.

9. The registered holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said lands for the said term without previous intimation in writing to the Collector. He also shall not produce dimensional stones fit for polishing purpose.

10. If the registered holder does not intend to carry on mining operations himself, but intend to lease out the right to do so to another person the registered holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the form set out in Appendix-V to the Tamilnadu Minor Mineral Concession Rules, 1959.

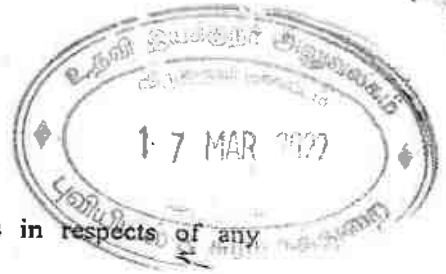
11. All land assessment, cess and seigniorage payable, under these present shall be recoverable under the provisions of the Tamilnadu Revenue Recovery Act 1864 as if they were arrears of land revenue.

12. In the event of any breach by the registered holder by any of the conditions of this agreement it shall be lawful for the Government to levy enhanced seigniorage fee or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the shall stand cancelled but without prejudice to any

*S. Panthi*  
LESSEE

*L*  
LESSOR

*(S) S. Panthi*



rights which the Government may have against the pattadars in respects of any antecedent claim of breach of convenient or condition.

13. Any notice to be given to the registered holder may addressed to his last known place of above and where a notice has been so addressed it shall deemed to have been duly served for the purpose of these presents.

14. Should any question or dispute arises regarding the agreement executed in pursuance of these rules of any matter or thing connected therewith or the powers of the registered holder thereunder, the amount of payment of the Seigniorage fee or Area Assessment made payable thereby, the matter in issue shall be decided by the Director of Geology and Mining. In case the registered holder is not satisfied with the decision of the Director of Geology and Mining, the matter shall be referred to the State Government for decision.

15. The registered holder shall abide by the condition laid down in the payment of wages Act 1936 (Central Act IV of 1936). The Mines Act, 1952 (Central Act XXXV of 1952) and the Indian Explosives Act, 1884 (Central Act IV of 1884)

16. The registered holder should demarcate the lease hold area at his own cost and shall quarry Rough Stone only within the area leased out to him and keep the boundary stones, painted and maintained at all times.

17. The registered holder shall make his own arrangements for road, pathways channels and ramp etc. to the quarry at his own cost.

18. The registered holder shall obtain the permits and despatch slips for the transport of Rough Stone from the Assistant Director of Geology and Mining Virudhunagar. The despatch slips shall be kept in the quarry site and be issued to all the vehicles while transporting the Rough Stone from the quarry.

19. The registered holder shall leave a safety distance from the features like road, low tension and high tension power lines, transformers, temples, villages, place of Historical importance and Archaeological importance, Highways habitations etc., as per relevant regulations. Metalliferous Mines and Regulations Act, 1961 and as per Tamilnadu Minor Minerals Concession Rules, 1959.

*S. Ranthu*  
**LESSEE**

*KG*  
**LESSOR**

*(X) S. Ranthu*

20. The registered holder shall put up a board at the entrance of the lease holds area of showing very clearly the details of the S.Nos., Villages, Extent of the Area, Period of Lease, the authority granting the lease etc.

21. The registered holder shall immediately report any accident that may occur the quarry site to the District Collector, Assistant Director of Geology and Mining, and other Authorities concerned including the Director of Mines Safety, Ooragaum, Kolar District, Karnataka State.

22. The registered holder shall strictly adhere to the conditions and rules stipulated by the Government for the Minor Minerals from time to time.

23. In case event of any breach of rules or the conditions of the lease stated above the lease shall become liable for automatic termination without any prior notice.

24. The registered holder/lessee shall not disturb the Odai situated on the end the adjoining patta lands in any manner.

**THE SCHEDULE**

DISTRICT : VIRUDHUNAGAR

TALUK : SIVAKASI

VILLAGE : ETHIRKOTTAI

Survey No	Applied Area in Hectares	Safety Area in Hectares	Lease Area in Hectares	Four Boundaries			
				North	South	East	West
670	0.40.5	--	0.40.5	669	648	648	669,671
672/1	0.42.5	0.10.0	0.32.5	671	676,672	673	683,677
672/3	0.23.0	0.09.0	0.14.0	672/2	674,676	673	672/2
674	1.20.5	--	1.20.5	672,673	U.No. 45 Gangav 2007/10	647	675,676
675/2	0.41.5	--	0.41.5	675/1	-do-	674	677
678/3	0.43.0	0.04.5	0.38.5	672	675	674	676/2,677
688/2	0.85.0	--	0.85.0	688/1	669	667,668	685,687
687/3	0.35.0	--	0.35.0	689	688	688	687/2c
906/1A	0.50.0	--	0.50.0	903,907 908	906/1a	713	901
906/1B	0.50.5	0.04.5	0.46.0	906/1A	713,88 905	712	904,905
<b>TOTAL</b>	<b>5.31.5</b>	<b>0.28.0</b>	<b>5.03.5</b>				

*S. Ramthay*  
LESSEE

*LD*  
LESSOR

*(X) S. Ramthay*



All that pieces and parcels of land situated in Ethirkottai village in Sub Registration District of Keelarajakularaman within the Registration District of Virudhunagar.

For the purpose of stamp duty the anticipated Annual Seigniorage Fee from the demised land is Rs.32,000/-

IN WITNESS WHERE OF Thiru S. Ramachandran, E.T. Reddiapatti, Ethirkottai Post, Sivakasi Taluk, Virudhunagar District, the registered holder and the Collector, Virudhunagar District. Acting for and on behalf of any by the order and direction of the Governor of Tamilnadu have hereunto set their respective hands.

*S. Ramachandran*  
**LESSEE**

Signed by the above named  
in the presence of

1. *S. Anand*  
S. ANAND  
241A EAST STREET  
BEVAL PATTI

2. *CP. JOTI MANI*  
CP. JOTI MANI  
137. Krishnan Temple Street  
Sriniluppattu.

Drafted by

*S. Anand*  
(S. Anand)  
3/a. சமீரன் வீடு, கிழக்கு தெரு  
சென்னை - 600 008  
தொலைபேசி: 813381VGR

*h*  
**LESSOR**  
COLLECTOR

Signed by the above named  
in the presence of.

1. *h*  
ASSISTANT DIRECTOR  
GEOLOGY AND MINING  
VIRUDHUNAGAR DIST.  
VIRUDHUNAGAR

2. *oys*  
தனித்துணை வட்டாளர் (கலரிமம்)  
விருதுநகர்

*S. Ramachandran*



தமிழ்நாடு தமிழ்நாடு TAMILNADU

CB 885975

127.58  
14.2.2022  
100% சிங்கரங்கோவில்

A. R. G. S. S.  
M. சிங்கரங்கோவில் ரஹ்மத்துல்லா  
நகர் 6  
செ.க  
உ.க  
1.26480/77

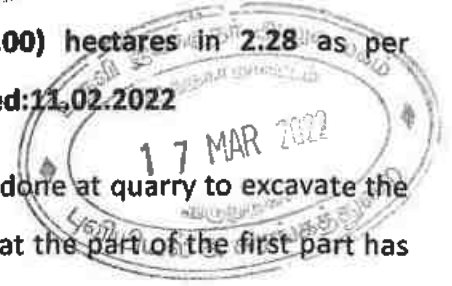
**DEED OF AGREEMENT**

This Agreement is entered into at SANKARANKOVIL on this 14-02-2022 between THIRU S.RAMACHANDRAN, S/O SUNDARA REDDIYAR,1/28,K.E.REDDIYAPATTI VILLAGE, VEMPAKOTTAI TALUK VIRUDHUNAGAR DISTRICT herein after referred to as party of the FIRST PART, and SRI BALAN EXPLOSIVES,RAMBALAN EXPLOSIVES having office at No. 7 GOMATHY NAGAR 15<sup>1</sup> STREET, SANKARANKOIL – 627756, TIRUNELVELI DISTRICT herein after referred to as party of the Second part.

*(Handwritten signature)*



The party of the first part is operating quarry work in the area ETHIRI KOTTAI Village, VEMPAKOTTAI Taluk, VIRUDHUNAGAR District. over and extent of survey number, PATTANO672/3(0.23.00), 674(1.20.50.), 675/2(0.41.50) AND 676/3(0.43.00) hectares in 2.28 as per Tamilnadu Govt's Collector Order No. N.K.N:KV1/664/2021 Dated: 11.02.2022



Whereas the party of the First Part wants blasting to be done at quarry to excavate the Blue metal stone. The blasting work is so intensive and large that the party of the first part has decided to entrust the work involved to the party of the second part on contract basis as follows.

The party of the First part will allot the blasting operations in the above said areas to the party of the Second part who is responsible for blasting rocks and also making his own arrangement for the explosives and exploding equipments required for the work. The entire blasting in the above quarry and the possession of the blasting equipment will be handled by the party of the second part having valid explosives License No. E63073, E83537 and Shot Firer licenses issued by the Joint Chief Controller of Explosives, South Circle, Chennai and he hereby undertake the responsibility for the work entrusted.

Payments will be made periodically by the party of the first part for the quantity used, explosives consumed and hours and time of the exploding equipments put into use. Calculations will be made and settlement will be arrived every month. The rates for the items of work will as mutually agreed as marginal cost which includes cost of explosives, transportation cost and other charges for blasting work. This agreement is made for all blasting in the said area.

The Agreement is valid from the date of execution and validity of quarrying leases granted by the State Government to the party of the First part. The agreement is terminable earlier by mutual consent with a month's notice. The agreement will expire with the expiry of quarry lease.

First Party:

P. Ramasamy

Second Party:

S. Pandey

Witnesses:

1. P. Lavanya Sankarankovil
2. R. Jayalakshmi R. Jayalakshmi Sankarankovil

Place: SANKARANKOVIL

Date: 18-02-2022

S. Pandey





License Issued under Rule 10(1) of Explosives Rules, 2008  
By Sri De P. S. Sankar, Controller of Explosives, Chennai on 30/09/2013

**अनुमति प्रारूप पत्र - 7 / LICENCE FORM LE-7**  
(विस्फोटक नियम 2008 की अनुसूची 4 के भाग 1 का अनुसूच 7 देवें)  
(See article no 7 of Part 1 of Schedule IV of Explosives Rules, 2008)

अनुमति : सड़क वैन में विस्फोटकों के परिवहन के लिए  
Licence to : transport explosives in a road van



अनुमति संख्या / Licence No. : EBC/TN/25/787(E74590)  
वार्षिक फीस रकम / Annual Fee Rs : 2500/-

- अनुमति एतद्वारा जारी की जाती है  
Licence is hereby granted to : **SSP Ramasamy (Occupier : SSP Ramasamy)**  
Prop.M/s. Sri Balan Explosives, 7, Gomathi Nagar, Sankarankovil, Tirunelveli,  
District-TIRUNELVELI, State-Tamil Nadu, Pincode-627756
- अनुमतिधारियों की स्थिति / Status of licensee : Proprietorship Firm
- सड़क वैन की विविधियाँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN 79 0012
यान का ब्रेक एवं मोडल / Make and model of vehicle	MAHINDRA AND MAHINDRA
सदमन रहित वजन / Unladen weight	1450 Kg(s)
सदमन सहित अधिकतम वजन / Maximum laden weight	2450 Kg(s)
परिवहन के लिए अनुमोदित विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	1000 Kg(s)
इंजिन संख्या / Engine No.	GLD1C50957
चैसिस संख्या / Chassis No.	MA1ZP2GLK01C30971
अन्य फिटिंग्स का विवरण / Description of Other Fittings	Fire Extinguisher, Spark Arrestor
काम के लिए अनुमोदित विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	1000 Kg(s)

- अनुमति परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):  
आरेखण संख्या / Drawing No : EBC/TN/25/787(E74590) दिनांक / dated : 30/09/2013
- सबसे पहले पर बंधा संबंधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुसूचियों के अधीन अनुमति प्रदान की जाती है।  
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures.  
(क) उपरोक्त ड्राइंग संख्या 4 में बंधांकित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.  
(ख) अनुमति प्राप्तिद्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
- यह अनुमति तारीख 31 मार्च 2018 तक विधिवानुषंग रहेगी / This licence shall remain valid till 31st day of March 2018

यह अनुमति, अधिनियम या उसके अधीन विहित नियमों या इस अनुमति की शर्तों के उल्लंघन, अनुसूची 5 के भाग 4 में सम्मिलित, जहाँ भी लागू हो, या यदि अनुमति परिसर अक्षरों का उसी संलग्न उपायों में दर्शाए गए विवरण के अनुरूप नहीं पाए जाने पर निम्नलिखित या प्रतिबंधित की जा सकती है।  
This licence is liable to be suspended or revoked for any violation of the Act or rules framed there under or the conditions of this licence as set forth under, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and structures attached hereto.

दिनांक / Date: 30/09/2013

Sd/-  
संयुक्त मुख्य विस्फोटक नियंत्रक / Joint Chief Controller of Explosives  
दक्षिण क्षेत्र, चेन्नई / South Circle, Chennai

अनुमति के नवीनीकरण हेतु सूचना / Endowment for renewal of license		
नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुमोदित अधिकारी के हस्ताक्षर Signature of Licensing authority
22/02/2018	31/03/2023	Jt. Chief Controller of Explosives, South Circle, Chennai

शुद्धिपूर्ण व्यवहार : विस्फोटकों का सन्तुल्य से प्रयोग या सन्तुल्य विधि के अधीन सम्बन्धित शैक्षिक अज्ञान होना।  
Stainless Handling : Mishandling and misuse of explosives shall constitute serious criminal offences under the law.

S. Rantia

S. Rantia

अनुमति प्रपत्र एल.ई.-10 | Form LE-10  
 शॉट फायरिंग कर्ता प्रमाण-पत्र | Shot Firing's Certificate  
 (अनुसूची IV के भाग 1 का अनुच्छेद 10 देखें | See article 10 of Part 1 of Schedule IV)  
 (विस्फोटक नियम, 2008 का नियम 107(5) देखें | See rule 107(5) of Explosives Rules, 2008)

(खान अधिनियम, 1952 के अधीन न आने वाले क्षेत्र में विस्फोट करने के लिए सक्षमता प्रमाण)  
 (Certificate of competency to carry out blasting of explosives in area not coming under the Mine)



संख्या | No.: E/SC/TN/30/1382(E/9312)

प्रमाणित किया जाता है कि श्री P Ganesh Kumar, जिनका जन्म 02/11/1977 को हुआ था, जो C/o.Sri Balan Explosives, 71 GandhiNagar, Sankaranakovil, THIRUNELVELI, Tamil Nadu - 627756 के निवासी हैं ने, तैयारी द्वारा तारीख को आयोजित शॉट फायरिंग की परीक्षा तारीख को उत्तीर्ण कर ली है और वह विस्फोटक अधिनियम, 1884 और उसके अधीन विहित नियमों के उपबंधों के अधीन रहते हुए खान अधिनियम, 1952 की परिधि के अधीन आनेवाले खानों से अन्यथा क्षेत्र में जोधे तथा उचित विस्फोटकों का उपयोग करते हुए विस्फोट प्रचालन करने के लिए प्राधिकृत है।  
 This is to certify that Shri P Ganesh Kumar, born on 02/11/1977 resident of C/o.Sri Balan Explosives, 71 GandhiNagar, Sankaranakovil, THIRUNELVELI, Tamil Nadu - 627756 passed the shottfiring's examination held on conducted by Chennai and is authorised to conduct blasting operations as mentioned below using explosives in areas other than mines coming under the purview of the Mines Act 1952, subject to the provisions of the Explosives Act, 1884 and the rules framed thereunder.

विस्फोट करने के प्राधिकृत वर्ग, प्रकार और प्रकार :  
 वर्ग (F), श्रेणी: कृषि, कृषि और कुआर खानों में स्टास्टिंग के सभी प्रकार

Authorised class, category and type of blasting :  
 Class : (F), Category : Agricultural, All phases of blasting in agricultural and well shafting

[नियम 107 का उप-नियम (5) का स्पष्टीकरण देखें | See explanation of sub-rule (5) of rule 107]

यह प्रमाणपत्र 13/02/2019 (तारीख को तारीख से पांच वर्षों तक विधिवानुसंग होगा।)  
 This certificate shall remain valid till 13/02/2019 (five years from the date of issue)

यह प्रमाणपत्र अधिनियम या उसके अधीन विहित नियमों अथवा इन प्रमाणपत्र की शर्तों का कोई उल्लंघन करने पर या यदि आशंका उत्पन्न हो कि कोई अशुद्धि या असंगतता है तो निरस्त या अमान्य कर दिया जाएगा।  
 This certificate is liable to be suspended or revoked for any violation of the Act or rules framed thereunder or the conditions of this certificate or if there is any discrepancy or deviation in the information or suppression of facts furnished by the applicant in his application form.

स्थान | Place: चेन्नई | Chennai  
 दिनांक | Date: 13/02/2014

Sd/-  
 संयुक्त मुख्य विस्फोटक निरीक्षक | Joint Chief Controller of Explosives  
 इलाका, चेन्नई | South Circle, Chennai

पुनर्विधिवानुसंगता के लिए पुनःकरण  
 Endorsement for revalidation

पुनर्विधिवानुसंगता की तारीख Date of Revalidation	समाप्ति की तिथि Date of Expiry	अनुमति प्राधिकारी के हस्ताक्षर Signature of licensing authority
07/03/2019	13/02/2024	Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से खानों या उनका दुरुस्तेमाल विधि के अधीन गंभीर दंडित अपराध होगा।  
 Statutory Warning : Mishandling and abuse of explosives shall constitute serious criminal offence under the law.

*(Handwritten signature)*



**अनुज्ञापित प्ररूप एल. ई-3 | LICENCE FORM LE-3**

(विस्फोटक नियम, 2008 का अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) व (घ) दोषाह)।  
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने  
Licence to possess; (c) for use explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazine

अनुज्ञापित सं. (Licence No.): E/SC/FN/22/552/E63073)  
वार्षिक फीस रूपर (Annual Fee Rs): 5500/-

1. Licence is hereby grant 3 to

M/s Sri Balan Explosives (अधिभोगी / Occupier: Shri P. Ramasamy), 71-Gomathi Nagar, Sankarankoil, Town/Village - Sankarankoil, District-THIRUNELVELI, State-Tamil Nadu, Pincode - 627756

को अनुज्ञापित अनुदत्त की जाती है।

2. अनुज्ञापितकारी की प्ररूपति | Status of licensee: **Partnership Firm**

3. अनुज्ञापित निम्नलिखित प्रयोजनों के लिए विधिमान्य है।  
Licence is valid only for the following purpose.

4. अनुज्ञापित विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।  
Licence is valid for the following kinds and quantity of explosives - (क) (a)

क्र. सं. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Nitrate Mixture	2.0	0	1250 Kg.
2.	Safety Fuse	6.1	0	10000 Mtrs
3.	Electric and/or Ordinary Detonators	6.3	0	40000 Nos.
4.	Detonating Fuse	6.2	0	7000 Mtrs

possess for use of Nitrate Mixture, Safety Fuse, Electric and/or Ordinary Detonators, Detonating Fuse, के उपयोग के लिए

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा (अनुच्छेद 3(क) और (घ) के अधीन अनुज्ञापित के लिए)  
(b) Quantity of explosives to be purchased in a calendar month (applicable for licence under article 3(b) and (c))

18 times as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापित परिसर की धृष्टि होती है।  
The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/SC/FN/22/552/E63073)  
दिनांक (Dated) 14/07/2011

6. अनुज्ञापित परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:  
Survey No. 97/5, ग्राम (Town/Village): Kavalakanni, Sankarankoil-talek

जिला (District) **THIRUNELVELI** राज्य (State) **Tamil Nadu** पुलिस थाना (Police Station): Sankarankoil  
दूरभाष (Phone) **ई मेल (E-Mail)** पिनकोड (Pincode) **627756**  
फैक्स (Fax)

7. अनुज्ञापित परिसर में निम्नलिखित सुविधाएँ अनुज्ञापित हैं।  
The licensed premises consists of following facilities.

A High Explosives Room, Lobby and a Detonator room as per the plan

8. अनुज्ञापित समय - समय पर एकाधिकारित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपबंधों के अधीन रहते हुए अनुदत्त की जाती है।  
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures.

- उपरोक्त क्रम सं. 3 में पया कथित रेखाचित्र (स्थान, सत्रियाण संबंधी और अन्य विवरण दर्शित करते हुए) Drawings (showing site, constructional and other details) as stated in serial No. 3 above.
- अनुज्ञापित प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापित की शर्तों और अतिरिक्त शर्तों। Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञापित तारीख 31 मार्च 2016 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2016.

यह अनुज्ञापित अधिनियम या उसके अधीन विरचित नियमों या अनुसूची 4 के भाग 1 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपरोक्त इस अनुज्ञापित की शर्तों का अधिकांश करने या यदि अनुदत्त परिसर योजना या उससे सतत उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिलंबित की जा सकती है, जहाँ यह लागू हो।  
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 14/07/2011

Sd/-  
**संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives**  
South Circle, Chennai

**Amendments:**

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated - 20/07/2012
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated - 31/01/2013

नवीनीकरण के पृष्ठांकन के लिए स्थान  
Space for Endorsement of Renewal

नवीनीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of Licensing authority and stamp
21/04/2021	31/03/2026	

J. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी: विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडित अपराध होगा।  
Statutory Warning: Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

**Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.**

*S. Prashanth*

**शर्तें / CONDITIONS**

संख्या | No.: E/SC/TN/30/1382(E79312)

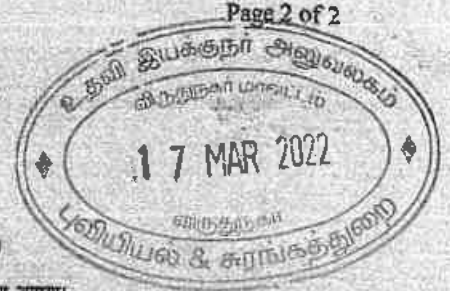


1. यह परमिट/परमिट धारक को ध्वंसित करने के लिए तब तक अधिभूत करता है जब तक कि वह विस्फोटक नियम, 2008 के अंतर्गत फॉर्म एनई-3 में दिए अनुमति धारक (अनुमति संख्या : E/SC/TN/22/552(E63073))। M/s Sri Balan Explosives के नौकरी/अनुबंध के अधिन काम कर रहा है।  
This permit authorizes the permit holder to conduct blasting so long as he is working under the employment/contract of M/s Sri Balan Explosives holding valid licence (Licence No. E/SC/TN/22/552(E63073)) in Form LE-3 of Explosives Rules, 2008.
2. विस्फोटक सामग्री प्राप्त करने, उनके स्वामित्व परिवहन संभालण, उठाई धराई और उपयोग करने के लिए सभी स्थानीय विधियों और विनियमों का अनुसरण किया जाएगा।  
All local laws and regulations applicable for obtaining, owning, transporting, storing, handling and using explosive materials shall be followed.
3. विस्फोटक सामग्री को अर्थाधिकृत कर्मों से संरक्षित किया जाएगा तथा उसे परित्यक्त नहीं किया जाएगा।  
Explosive materials shall be protected from unauthorised possession and shall not be abandoned.
4. विस्फोटक सामग्री का उपयोग केवल ऐसे अनुभवी व्यक्तियों द्वारा किया जाएगा जो उनमें अंतर्वस्तु परिसंकेत को जानते हैं और जिनके पास अपेक्षित अनुमतिपत्र हैं।  
Explosive materials shall be used only by experienced persons who are familiar with the hazards involved and who hold all required permits.
5. लोडिंग और फायरिंग या उसके पर्यवेक्षण केवल ऐसे व्यक्ति द्वारा किया जाएगा जिसके पास समुचित शाट फायरकनता प्रमाणपत्र और विस्फोट के लिए अनुमतिपत्र हैं।  
Loading and firing shall be performed or supervised only by a person possessing an appropriate shot firer certificate and permit to blast.
6. प्रशिक्षण स्टाफक और अन्य व्यक्ति, जिनके पास अपेक्षित शाट फायरकनता प्रमाणपत्र या अनुमतिपत्र नहीं हैं, केवल ऐसे अनुमतिपत्र धारण करने वाले व्यक्तियों के पर्यवेक्षण के अधिन काम करेंगे।  
Trained helpers and other persons who do not hold the required shot firer certificate or permits shall work only under the supervision of persons holding such permits.
7. ऐसे स्थान पर कोई विस्फोटक सामग्री उपस्थित या भंडारित नहीं की जाएगी जहाँ आसपास गर्मी या उसके उद्भव में उच्च तापमान हो सकता है।  
No explosive materials shall be located or stored where they may be exposed to flame excessive heat sparks or impact.
8. ऐसे स्थान के 15 मीटर के भीतर धूम्रपान करने की अनुमति नहीं दी जाएगी जहाँ विस्फोटकों को जमा किया गया है या उनका उपयोग किया गया है।  
No smoking shall be permitted within 15 metre of any location where explosives are being handled or used.
9. कोई व्यक्ति ऐसे स्थान के 15 मीटर के भीतर कोई मॉर्च, सिगरेटों का अन्य प्रकार की अग्नि या ज्वला नहीं जलाएगा, जहाँ विस्फोटकों को जमा किए गए हैं या उनका उपयोग किया जा रहा है। तथापि इस अपेक्षा से सुरक्षित फ्यूज जलाने के लिए उपयुक्त युक्तियों को छूट प्राप्त होगी।  
No person within 15 metres of any location where explosive are being handled or used shall carry any matches open light or other fire or flame. However, suitable devices for lighting safety fuse are excepted from this requirement.
10. मादक, शराब, स्थापक या अन्य खतरनाक औषधियों से प्रभावित किसी व्यक्ति को विस्फोटक सामग्री के उपयोग की अनुमति नहीं होगी।  
No person under the influence of intoxicating liquors narcotics or other dangerous drugs shall be allowed to handle explosive materials.
11. संभरण मैगजीन और विस्फोट स्थान के बीच परिवहन के दौरान विस्फोटक सामग्री को अनुमतिपत्र प्राप्त या वैक्यूम में रखा जाएगा।  
Explosive materials shall be kept in closed approved containers or packages while being transported between the storage magazine and the blasting site.
12. विस्फोट करने का शाट फायरकनता प्रमाणपत्र और अनुमतिपत्रधारक द्वारा प्राप्त की गई और फायर की गई या इससे निबटाई गई सभी विस्फोटक सामग्री का दैनिक अभिलेख रखा जाएगा। ऐसा अभिलेख पांच वर्ष तक प्रतिधारित किया जाएगा।  
A holder of a shot firer certificate and Permit to Blast shall keep a daily record of all explosive materials received and fired or otherwise disposed of by the permit holder. Such records shall be retained for five years.
13. शाट फायरकनता और कर्मचारी आपातकाल के दौरान बरती जानेवाली प्रक्रिया से अवगत होंगे।  
The shot firer and the employee shall be conversant with procedure to be taken during fire emergency.
14. शाट फायरकनता प्रमाणपत्र का धारक को सुरक्षा के केंद्र में नियंत्रक द्वारा जनक-समय पर दिए गए उन सभी या किसी निर्देशों का पालन करेगा।  
The holder of the shot firer certificate shall comply with all or any of the directions as may be given by the Controller from time to time in the interest of safety.
15. अग्नि या विस्फोटक के कारण होने वाली दुर्घटना और विस्फोटकों की क्षतिग्रहीता या घटती के बारे में निकटतम पुलिस स्टेशन और अनुमतिपत्र प्राधिकारी तथा अनुमतिपत्र प्राधिकारी के स्थानीय कार्यालय में तुरंत रिपोर्ट की जाएगी।  
Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the Controller of Explosives having jurisdiction over the area.

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives  
दक्षिणांचल, चेन्नई | South Circle, Chennai

(X) S. P. Senthil

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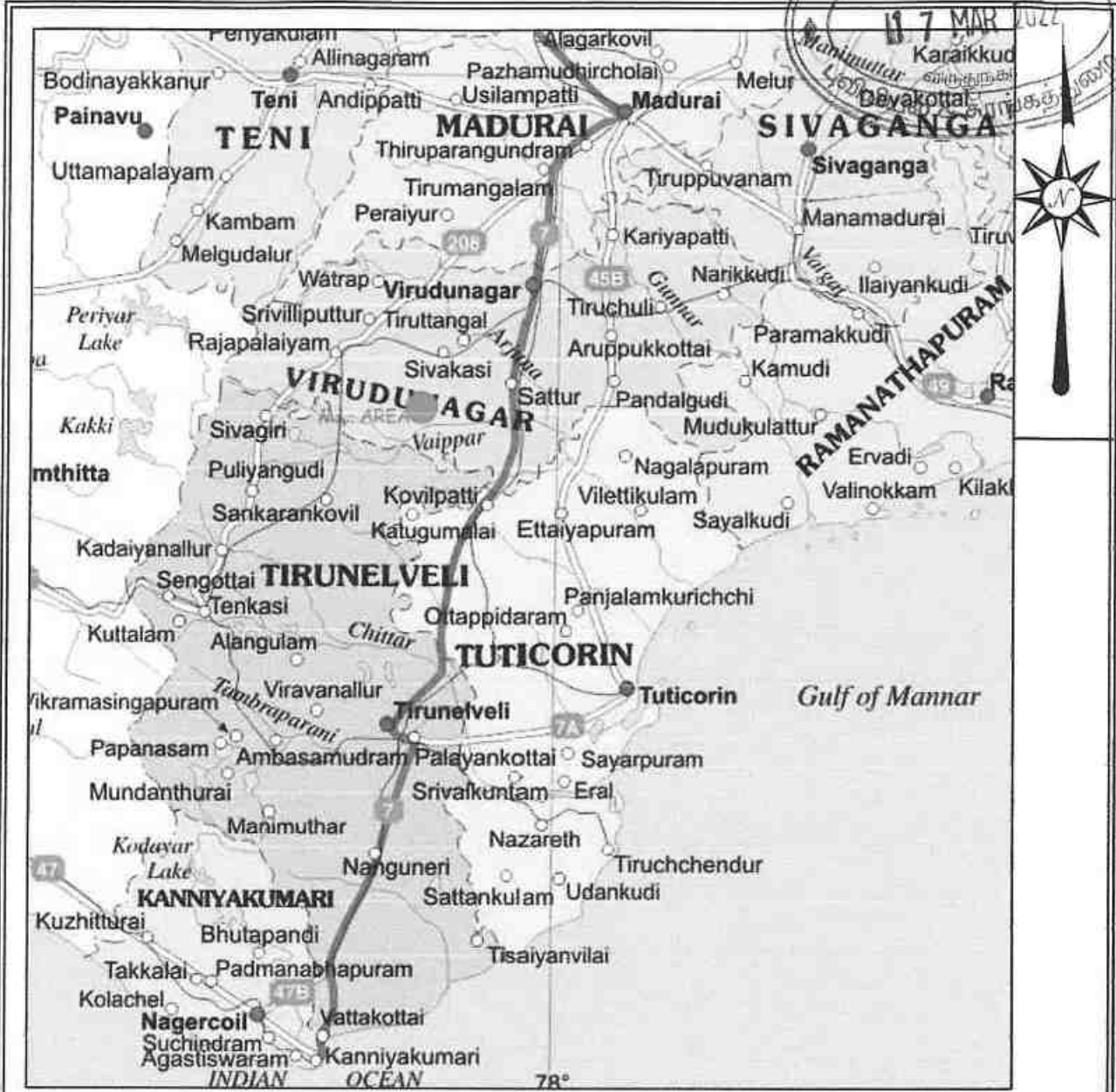


**शर्तें / Conditions**

1. यह अनुमति किसी अन्य वाहन में अंतरणीय नहीं है।  
This licence is not transferable to any other explosives van.
2. वाहन, उसके बोडी और अन्य फिटिंग्स में कोई भी परिवर्तन, अनुमति प्राप्त प्राधिकारी के अनुमोदन के बिना नहीं किया जाना चाहिए।  
No alterations should be made to the vehicle, its body and other fittings without approval from the licensing authority.
3. यह अनुमति या उसकी प्रतिलिपि/कॉपी सभी सड़क वाहनों में रखी जाएगी एवं निरीक्षण अधिकारी के मांगे जाने पर उसे प्रस्तुत किया जाएगा।  
This licence or its substantiated copy shall at all times be kept in the van and produced on demand by an inspecting officer.
4. सड़क वाहन को, विस्फोटकों के परिवहन के लिए तब तक प्रयोग नहीं किया जाएगा जब तक कि यह ठीक हालत में नहीं है और विस्फोटक नियम 2008 का अनुपालन नहीं करता है।  
The road van shall not be used for transport of explosives unless it is in a fit condition and complies with the Explosives Rules, 2008.
5. सड़क वाहन का प्रयोग, इस अनुमति द्वारा प्राधिकृत सामग्री से शिवाय किसी सामग्री के लिए तब तक नहीं किया जाएगा जब तक कि अनुमति प्राप्त प्राधिकारी द्वारा इसकी लिखित अनुमति न दी हो।  
The road van shall not be used for transport of any material other than that authorized by this licence, unless permitted by licensing authority in writing.
6. सड़क वाहन में धूम्रपान नहीं किया जाएगा न उसमें अग्नि या कृत्रिम प्रकाश या कोई ऐसे वस्तु जिससे अग्नि उत्पन्न हो सकती हो की अनुमति दी जाएगी।  
No smoking and no fire or artificial light or any article capable of causing fire shall be allowed on the explosives van.
7. वाहन को प्रयोग यात्रियों के वहन के लिए नहीं किया जाएगा।  
The vehicle shall not be used for carrying passenger.
8. जिस समय सड़क वाहन पर विस्फोटकों की सहाई या उत्पत्ति या परिवहन किया जा रहा हो, उस समय सड़क वाहन ऐसे किसी सड़क व्यक्ति के प्रचार में होगा जिसे विस्फोटकों की परा-उत्पत्ति करने का अनुभव है और उससे पूर्णतः परिचित है। जहाँ कहीं अनुमतिधारी द्वारा न बताया जा रहा हो वहाँ एक ऐसा दस्तावेज, जिस पर अनुमतिधारी के हस्ताक्षर हों और उन व्यक्तियों का नाम दर्ज हो जिन्हें वाहन को चलाने के लिए प्राधिकृत किया गया हो, के साथ ले जाया जाएगा और किसी निरीक्षण अधिकारी द्वारा मांग की जाने पर इसे प्रस्तुत किया जाएगा।  
Road van, while explosives are being loaded or unloaded or transported shall always be under the charge of competent person who shall be experienced in handling of explosives and fully conversant there under. Where the vehicle is not driven by the licence holder, a document signed by the licensee naming persons authorised to drive and accompany the vehicle shall be carried in the van and produced on demand to an inspecting officer.
9. सड़क वाहन में किसी भी विस्फोटक का परिवहन तब तक नहीं किया जाएगा जब तक कि वे विस्फोटक नियमों के अनुसार या मुख्य विस्फोटक निबंधक द्वारा विनिर्दिष्ट रीति से पैक न कर दिए गए हों।  
No explosives unless they are packed in accordance with the Explosives Rules or in a manner specified by the Chief Controller shall be transported in the explosives van.
10. किसी अन्य विस्फोटकों के साथ डिटेनेटर्स का परिवहन नहीं किया जाएगा।  
Detonators shall not be transported with any other explosives.
11. यदि सड़क वाहन में कोई टूट-पूट हो जाती है या उसमें अग्नि उत्पन्न होती है या विस्फोट हो जाता है अथवा सड़क वाहन इनमें किसी से अंतर्गन्त हो जाती है तो ऐसी टूट-पूट, दुर्घटना, अग्नि या विस्फोट की पूरी रिपोर्ट के साथ इस तथ्य की जानकारी अनुमति प्राप्त प्राधिकारी को तुरन्त दी जाएगी। यदि ऐसी दुर्घटना, अग्नि या विस्फोट में किसी व्यक्ति की मृत्यु हो जाती है या किसी व्यक्ति का संपत्ति को गंभीर क्षति पहुँचती है तो उसकी रिपोर्ट निकटतम पुलिस स्टेशन को तुरन्त की जाएगी।  
Any breakdown, accident, fire or explosion occurring in or involving the road van, shall be immediately reported to the licensing authority together with a full report of such breakdown, accident, fire or explosion. If such accident, fire or explosion is attended with loss of human life or serious injury to person or property, a report shall also be made immediately to the nearest Police Station.
12. विस्फोटकों को वाहन में परिवहन के अनुमति परिसर में ही लोड किया जाएगा और चरबी के अनुमति परिसर पर ही उतारा जाएगा।  
The explosives shall be loaded into the van only at the licensed premises of consignee and unloaded from the van at the licensed premises of the consignee.
13. अनुमतिधारी, परिवहन किए जाने वाले विस्फोटकों का लेखाजोखा प्रत्येक आरई-6 में रबोला और निरीक्षण अधिकारी द्वारा मांगे जाने पर प्रस्तुत करेगा।  
The licensee shall maintain account of explosives transported in Form RE-6 and present the same on demand by an inspecting officer.
14. अनुमतिधारी और कार्यकारी अधिकारी के अंतर्गत क्षेत्र के दौरान की जाने वाली प्रक्रिया से अवगत रहेंगे।  
The licensee and the employer shall be conversant with procedure to be taken during the emergency within the premises.
15. किसी निरीक्षण करने या नमूना लेने वाले अधिकारी को सभी सुविधाएँ सड़क वाहन पर अनुमति परिसर में अथवा पशु प्रयोग की जाएगी और यह अनिश्चित करने के लिए कि अधिनियम और इन नियमों के उपबंधों तथा सुरक्षा सम्बन्धी धर्ती का सम्बन्ध रूप से प्रस्तुत किया जाता है, उस अधिकारी को प्रत्येक सुविधा उपलब्ध कराई जाएगी।  
Five access shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act or these rules and these conditions are duly observed.
16. यदि अनुमति प्राप्त प्राधिकारी को विस्फोटक निबंधक, लिखित में अनुमतिधारक को ऐसे संस्तुतियों को सिफारिश करने के लिए, जो ऐसे प्राधिकारी की राय में अमान्य जोखिम उत्पन्न कर सकता है और स्थल पर या स्थल से बाहर व्यक्तियों की सुरक्षा के लिए अपर्याप्त है, सूचित करता है तो अनुमतिधारी इन संस्तुतियों को सिफारिश करना और ऐसे प्राधिकारी द्वारा विनिर्दिष्ट अवधि के अंदर अनुमति प्राप्त प्राधिकारी को रिपोर्ट देना।  
If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and so necessary for the safety of either on-site or off-site persons, the holder of the licence shall execute the recommendations and report compliance within the period specified by such authority.
17. अग्नि या विस्फोटक के कारण होने वाली दुर्घटना और विस्फोटकों की हानि, कमी या चोरी के बारे में निकटतम पुलिस स्टेशन और अनुमति प्राप्त प्राधिकारी तथा अनुमति प्राप्त प्राधिकारी के स्थानीय कार्यालय को तुरन्त रिपोर्ट की जाएगी।  
Accidents by fire or explosion and losses, shortages or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority.

मुख्य विस्फोटक निबंधक, Chief Controller of Explosives  
दिल्ली, कर्नाट | South Circle, Chennai

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**NAME OF THE APPLICANT:**  
 S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
 1/28, NORTH STREET, E.T. REDDIAPATTI VILLAGE,  
 ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
 VIRUDHUNAGAR DISTRICT - 626 131.

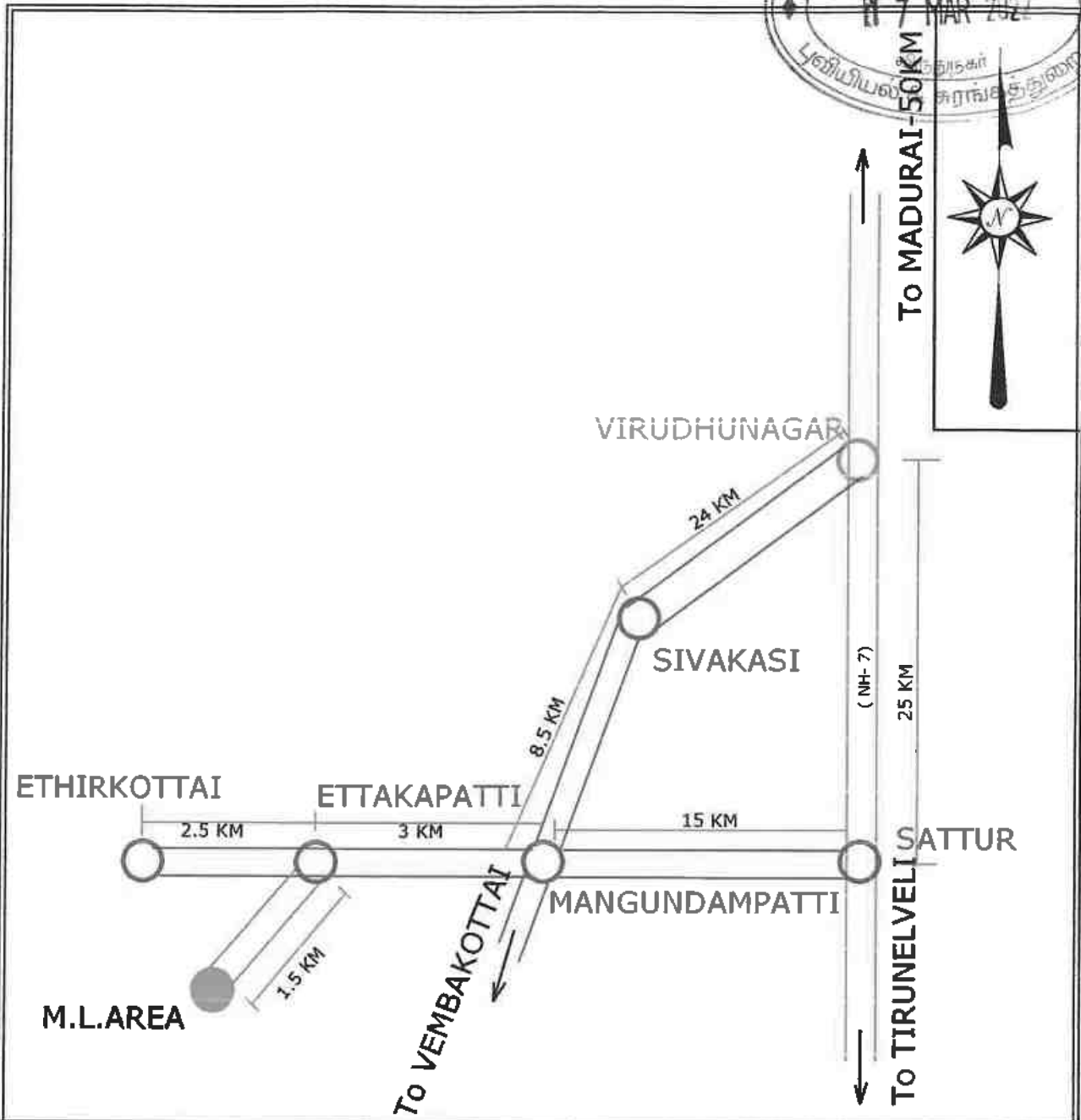
**PLATE NO. I**  
ROUGHSTONE/JELLY/GRAVEL QUARRY  
**LOCATION PLAN**  
 SCALE: - 1CM = 12.5KMS


**INDEX:-**  
**MINING LEASE APPLIED AREA** ●

● State capital	— Golden Quadrilateral
● District headquarters	— North-South & East-West Corridors
○ Other town	— National Highway
45 National Highway number	— Railway

**PREPARED BY:-**  
  
**G. RAVICHANDRAN, M.Sc. PGD.MER.**  
**MINING GEOLOGIST**  
 RQP / MAS / 197 / 2005 / A  
 VALID UPTO: 12.12.2025










<p><b>NAME OF THE APPLICANT:</b>          S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,          1/28, NORTH STREET, E.T. REDDIAPATTI VILLAGE,          ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,          VIRUDHUNAGAR DISTRICT - 626 131.</p>	<p><b>PLATE NO. IA</b>  <u>ROUGHSTONE/JELLY/GRAVEL QUARRY</u>  <b>KEY MAP</b>          SCALE:- NOT TO SCALE</p>
<p><b>INDEX:-</b></p> <ul style="list-style-type: none"> <li>● MINING LEASE APPLIED AREA</li> <li>══ NATIONAL HIGHWAY</li> <li>══ MAIN ROAD ( VILLAGE ROAD)</li> <li>══ APPROACH ROAD</li> </ul>	<p><b>PREPARED BY:-</b>    <b>G. RAVICHANDRAN, M.Sc. P.G.D.M.E.N.,</b>  <b>MINING GEOLOGIST</b>  <b>RQP / MAS / 197 / 2005 / A</b>  <b>VALID UPTO: 12.12.2025</b></p>

⊗ S. Hanthi



**NAME OF THE APPLICANT:** விருதுநகர்  
 S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
 1/28, NORTH STREET, E.T. REDDIAPATTI VILLAGE,  
 ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
 VIRUDHUNAGAR DISTRICT - 626 131.


**TOPO SHEET No.58-G/11**  
 LATITUDE : 9° 21' 49.3"N To 9° 21' 54.7"N  
 LONGITUDE : 77° 44' 23.1"E To 77° 44' 28.0"E

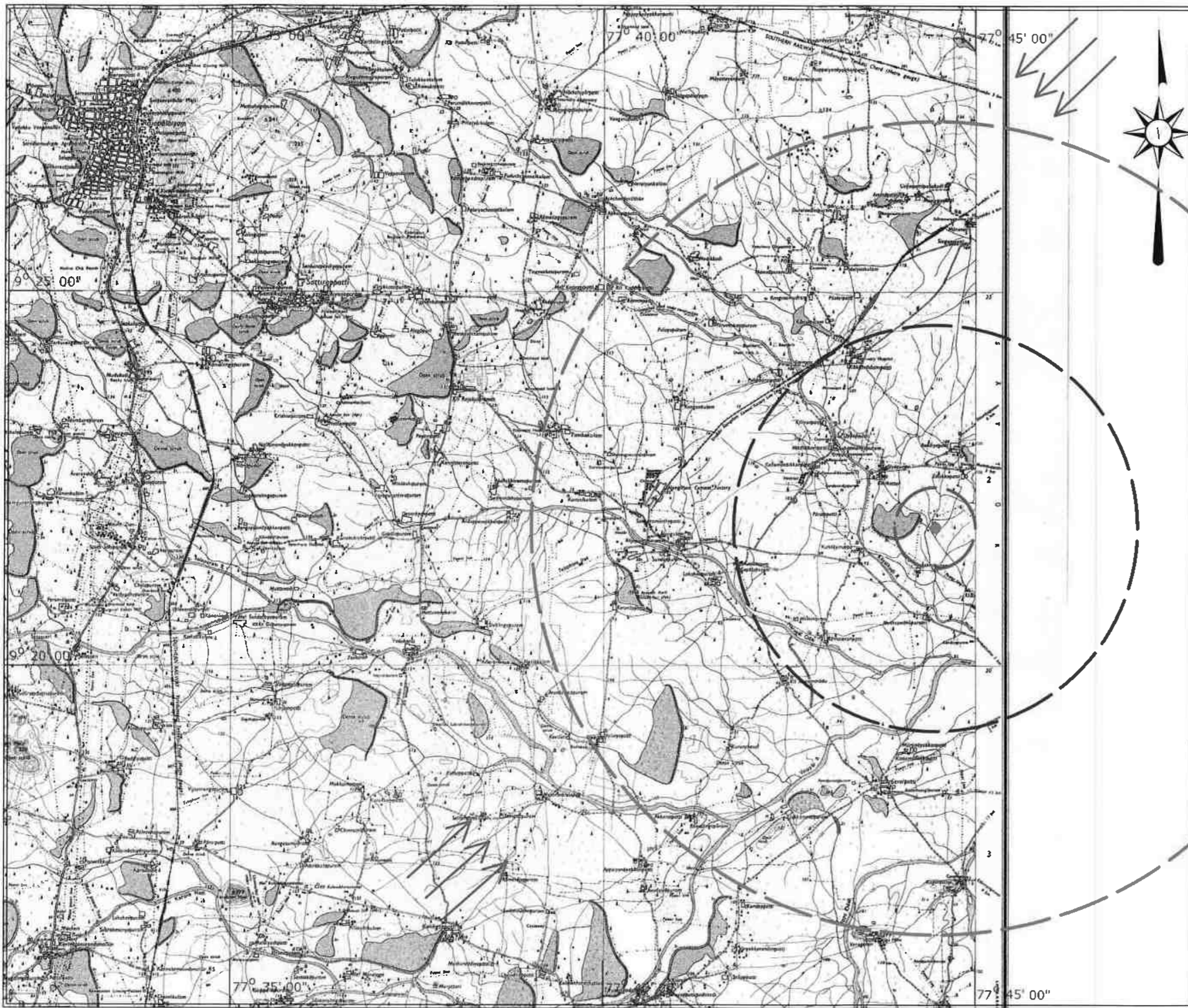
- INDEX:-**
- MINING LEASE AREA 
  - WIND DIRECTION 
  - 1KM RADIUS 
  - 5KM RADIUS 
  - 10KM RADIUS 

**CONVENTIONAL SYMBOLS**

Express highway with toll: with bridge with distance stone			
Roads, metalled according to importance			
Roads, double carriageway according to importance			
Unmetalled road Cart-track Pack-track with pass Foot-path			
Streams with track in bed, undefined Canal			
Dams masonry or rock-filled, earthwork Weir			
River dry with water channel, with island & rocks Tidal river			
Submerged rocks Shoal Swamp Reeds			
Wells lined, unlined Tube-well Spring Tanks perennial, dry			
Embankments road or rail tank Broken ground			
Railways, broad gauge double, single with station, under constrn			
Railways, other gauges double, single with distance stone, do			
Mineral line or tramway Kin Cutting with tunnel			
Contours with sub-features Rocky slopes Cliffs			
Sand features (1)flat (2)sand-hills(permanent) (3)dunes(shifting)			
Towns or Villages inhabited; deserted Fort			

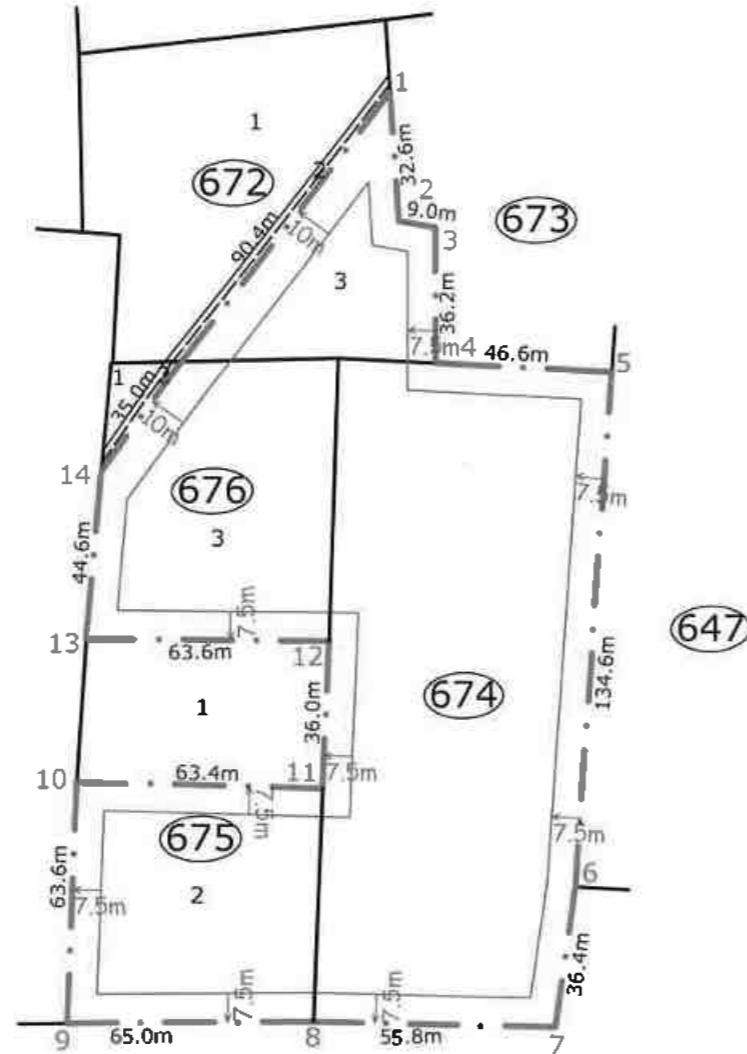
**ROUGHSTONE/JELLY/GRAVEL QUARRY**  
**TOPO SKETCH - 10KM RADIUS**  
 SCALE:- 1: 1,00,000

**PREPARED BY:-**  
  
**G.RAVICHANDRAN, M.Sc. P.G.D.M.E.M.,**  
**MINING GEOLOGIST**  
**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**









V.No.45 KANGAR SEVAL


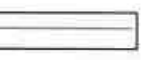
DETAILS OF BOUNDARY PILLARS

PILLAR	LATITUDE	LONGITUDE
1	9° 21' 56.8"	77° 44' 25.9"
2	9° 21' 55.8"	77° 44' 26.0"
3	9° 21' 55.7"	77° 44' 26.3"
4	9° 21' 54.6"	77° 44' 26.3"
5	9° 21' 54.7"	77° 44' 28.0"
6	9° 21' 50.5"	77° 44' 27.6"
7	9° 21' 49.3"	77° 44' 27.4"
8	9° 21' 49.3"	77° 44' 25.3"
9	9° 21' 49.3"	77° 44' 23.1"
10	9° 21' 51.4"	77° 44' 23.3"
11	9° 21' 51.3"	77° 44' 25.4"
12	9° 21' 52.5"	77° 44' 25.5"
13	9° 21' 52.7"	77° 44' 23.3"
14	9° 21' 53.8"	77° 44' 23.7"

**NAME OF THE APPLICANT:**

S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
1/28,NORTH STREET, E.T.REDDIAPATTI VILLAGE,  
ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
VIRUDHUNAGAR DISTRICT - 626 131.

**INDEX:-**

LEASE APPLIED BOUNDARY   
SAFETY DISTANCE 7.5M & 10M FROM CART TRACK 

**PROPOSED QUARRY LOCATION**

DISTRICT : VIRUDHUNAGAR  
TALUK : VEMBAKOTTAI  
VILLAGE : ETHIRKOTTAI  
S.F.Nos. : 672/3,674,675/2 & 676/3  
EXTENT : 2-28.0 HECTARE.


S.F.Nos.	EXTENT (Ha)
672/3	0-23.00
674	1-20.50
675/2	0-41.50
676/3	0-43.00
TOTAL	2-28.00 Ha

ROUGH STONE / JELLY / GRAVEL QUARRY

**LEASE PLAN**

SCALE:- 1: 2000

ALL PLANS AND SECTIONS ARE PREPARED  
BASED ON THE LEASE MAP AUTHENTICATED  
BY STATE GOVERNMENT.

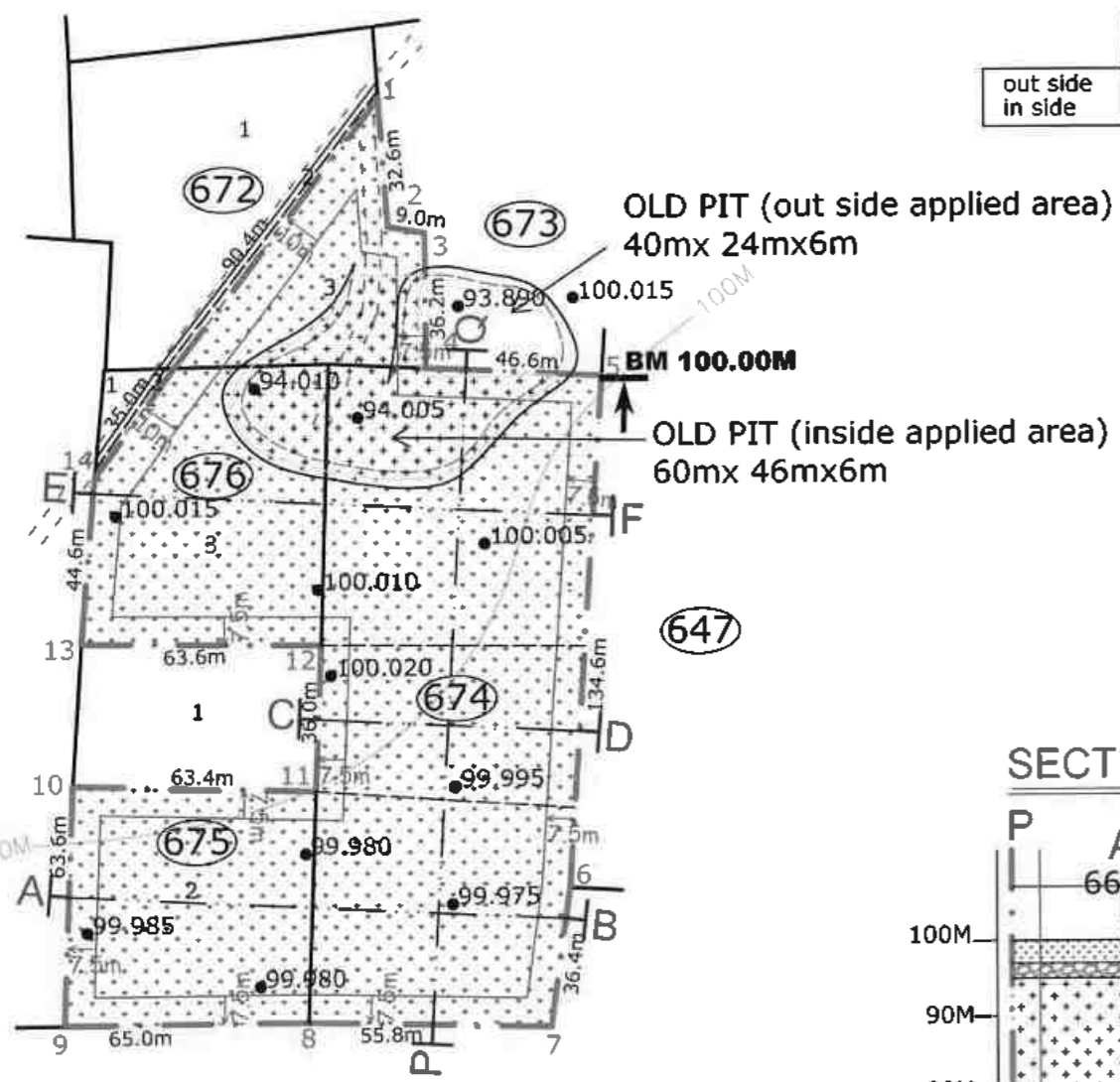
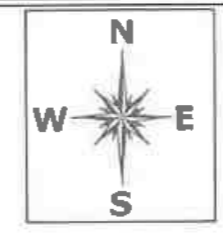
  
**G.RAVICHANDRAN, M.Sc.PG.D.M.E.M.,**  
MINING GEOLOGIST  
RQP / MAS / 197 / 2005 / A  
VALID UPTO: 12.12.2025





**OLD PIT SIZE**

	LENGTH [M]	WIDTH [M]	DEPTH [M]	VOLUME IN CUM
out side	40	24	6.0	5,760 Cu.m.
in side	60	46	6.0	16,560 Cu.m.

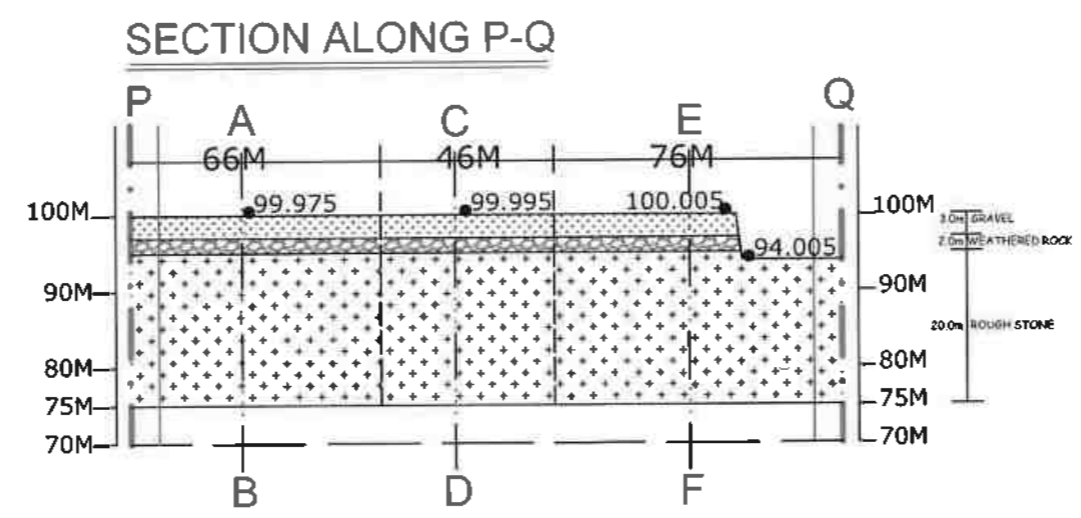


**GEOLOGICAL RESERVES**

MINERAL	SECTION	LENGTH [M]	WIDTH [M]	DEPTH [M]	VOLUME IN CUM	GEOLOGICAL RESERVES IN CUM
GRAVEL	PQ - AB	66	136	3.0	26928	68,424
	PQ - CD	46	76	3.0	10488	
	PQ - EF	76	136	3.0	31008	
WEATHERED ROCK	PO - AB	66	136	2.0	17952	45,616
	PO - CD	46	76	2.0	6992	
	PO - EF	76	136	2.0	20672	
ROUGH STONE	PQ - AB	66	136	20.0	179520	4,56,160
	PQ - CD	46	76	20.0	69920	
	PQ - EF	76	136	20.0	206720	
TOTAL GEOLOGICAL RESERVES QUANTITY IN CU.M.						5,70,200
DEDUCT OLD PIT QUANTITY (INSIDE THE APPLIED AREA) = 60m x 46m x 6m =						16,560
<b>TOTAL GEOLOGICAL RESERVES</b>						<b>5,53,640 Cu.m.</b>

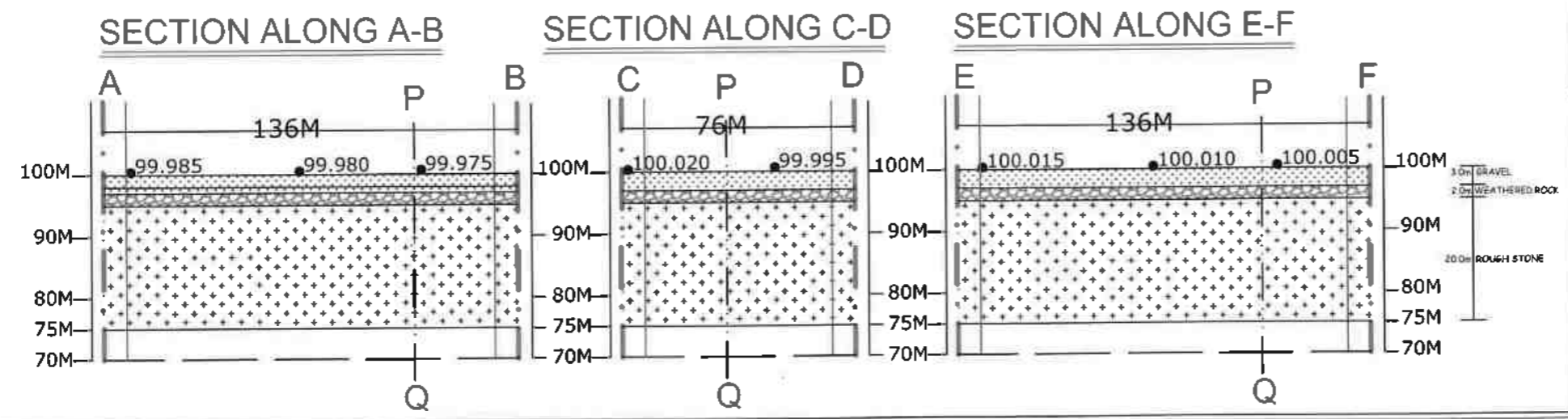
**NAME OF THE APPLICANT:**  
 S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
 1/28,NORTH STREET, E.T.REDDIAPATTI VILLAGE,  
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- INDEX:-**
- LEASE APPLIED BOUNDARY
  - SAFETY DISTANCE 7.5M & 10M FROM CART TRACK
  - BOUNDARY PILLARS
  - CONTOURS
  - BENCH MARK
  - APPROACH ROAD
  - EXISTING PIT
  - GRAVEL
  - WEATHERED ROCK
  - CHARNOKITE (ROUGH STONE)



V.No.45 KANGAR SEVAL

ROUGH STONE / JELLY / GRAVEL QUARRY  
**SURFACE CUM GEOLOGICAL PLAN & SECTIONS**  
 PLAN SCALE:- 1: 2000  
 SECTION SCALE:- HOR- 1: 2000, VER- 1:1000



ALL PLANS AND SECTIONS ARE PREPARED  
 BASED ON THE LEASE MAP AUTHENTICATED  
 BY STATE GOVERNMENT.

*G. Ravichandran*  
**G.RAVICHANDRAN, M.Sc., PGD.MEN,**  
**MINING GEOLOGIST**  
**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**

*S. Ramachandran*

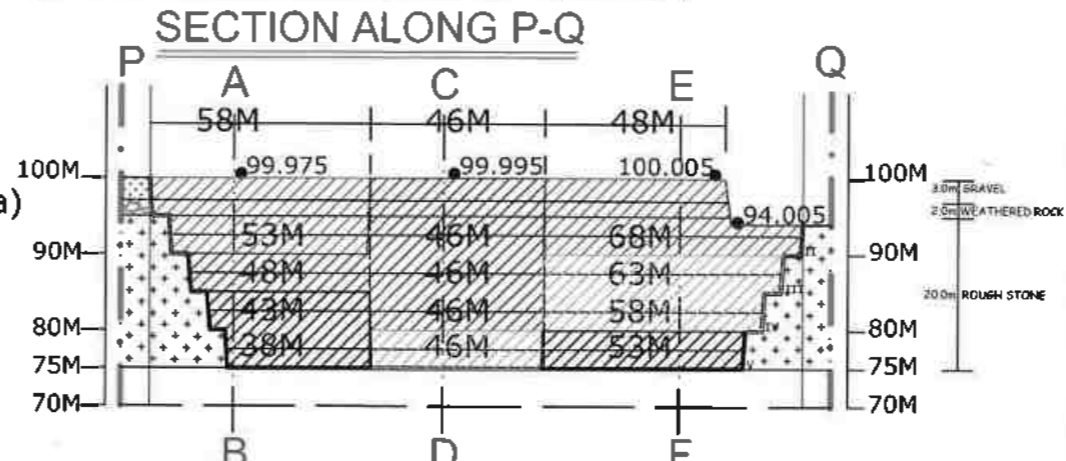
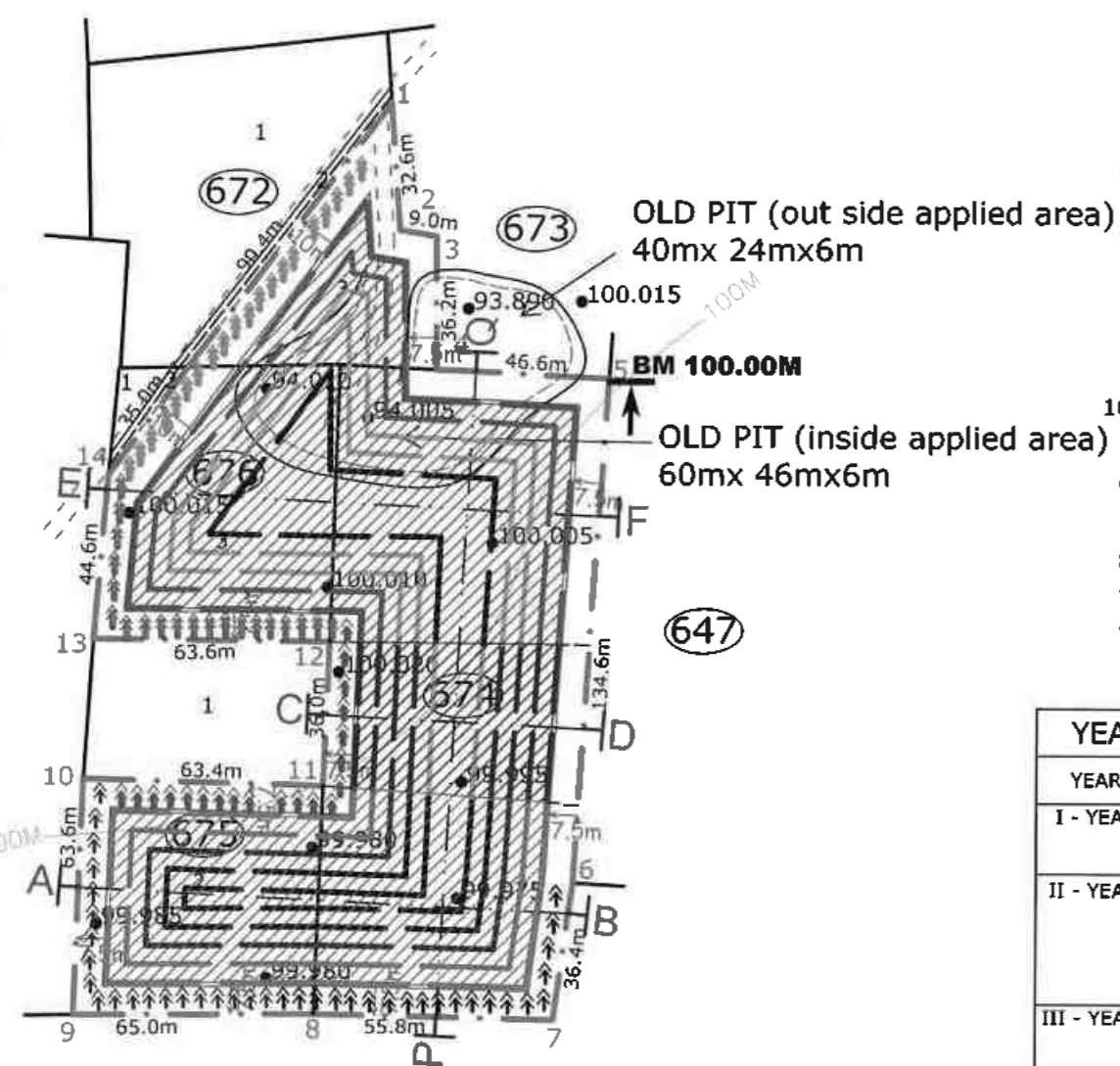


**AFFORESTATION PROGRAMME**

PLANTATION	TYPE	No of TREES	SPACING	AREA (Ha)	SURVIVAL
I YEAR	NEEM	20	6m x 6m	0-07.2	80%
II YEAR	NEEM	20	6m x 6m	0-07.2	80%
III YEAR	NEEM	20	6m x 6m	0-07.2	80%
IV YEAR	NEEM	20	6m x 6m	0-07.2	80%
V YEAR	NEEM	20	6m x 6m	0-07.2	80%
TOTAL PLANTATION AREA				0-36.0Ha	



**NAME OF THE APPLICANT:**  
 S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
 1/28,NORTH STREET, E.T.REDDIAPATTI VILLAGE,  
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 VIRUDHUNAGAR DISTRICT - 626 131.



- INDEX:-**
- LEASE APPLIED BOUNDARY
  - SAFETY DISTANCE 7.5M & 10M FROM CART TRACK
  - CONTOURS
  - BENCH MARK
  - APPROACH ROAD
  - CHARNOCKITE ( Roughstone)
  - I YEAR EXCAVATION
  - II YEAR EXCAVATION
  - III YEAR EXCAVATION
  - IV YEAR EXCAVATION
  - V YEAR EXCAVATION

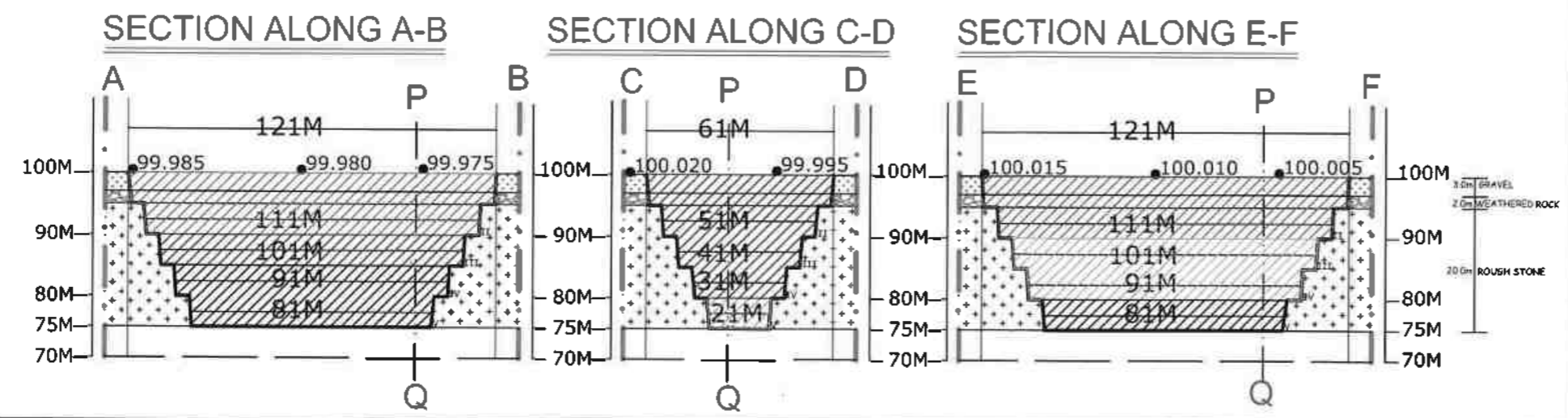
**YEARWISE PRODUCTION SCHEDULE**

YEAR	SECTION	BENCH	LENGTH [M]	WIDTH [M]	DEPTH [M]	VOLUME IN CUM			TOTAL PRODUCTION IN CUM
						GRAVEL	WEATHERED ROCK	ROUGH STONE	
I - YEAR	PQ-AB	I	58	121	3.0	21054	---	---	64,505
	PQ-AB	I	58	121	2.0	---	14036	---	
	PQ-AB	II	53	111	5.0	---	---	29415	
II - YEAR	PQ-CD	I	46	61	3.0	8418	---	---	66,560
	PQ-CD	I	46	61	2.0	---	5612	---	
	PQ-CD	II	46	51	5.0	---	---	11730	
	PQ-CD	III	46	41	5.0	---	---	9430	
	PQ-CD	IV	46	31	5.0	---	---	7130	
III - YEAR	PQ-AB	III	48	101	5.0	---	---	24240	66,780
	PQ-EF	I	48	121	3.0	17424	---	---	
	PQ-EF	I	48	121	2.0	---	11616	---	
IV - YEAR	PQ-EF	II	68	111	5.0	---	---	37740	63,035
	PQ-EF	III	63	101	5.0	---	---	31815	
	PQ-EF	IV	58	91	5.0	---	---	26390	
	PQ-CD	V	46	21	5.0	---	---	4830	
V - YEAR	PQ-AB	IV	43	91	5.0	---	---	19565	56,420
	PQ-AB	V	38	81	5.0	---	---	15390	
	PQ-EF	V	53	81	5.0	---	---	21465	
TOTAL PRODUCTION						46,896	31,264	2,39,140	3,17,300 C.m.

ROUGH STONE / JELLY / GRAVEL QUARRY

## LAND USE CUM YEARWISE PLAN & SECTIONS

PLAN SCALE:- 1: 2000  
 SECTION SCALE:- HOR- 1: 2000, VER- 1:1000



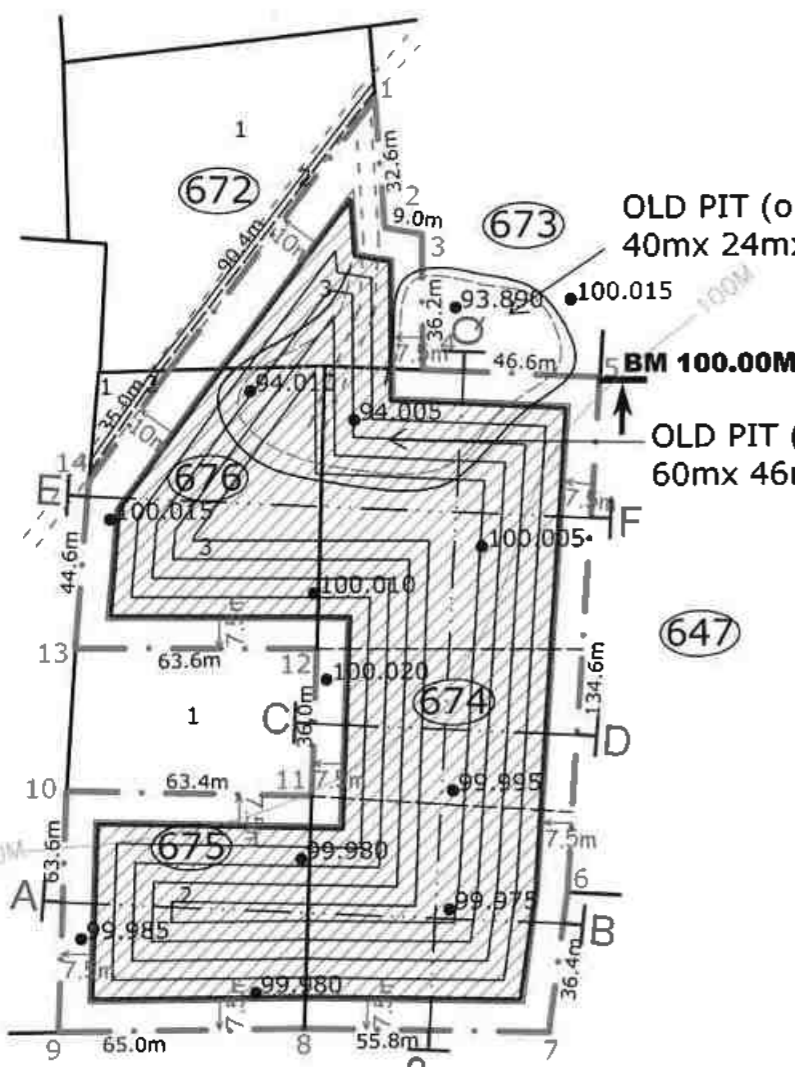
ALL PLANS AND SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.

*G. Ravichandran*  
**G.RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
**MINING GEOLOGIST**  
 RQP / MAS / 197 / 2005 / A  
 VALID UPTO: 12.12.2025

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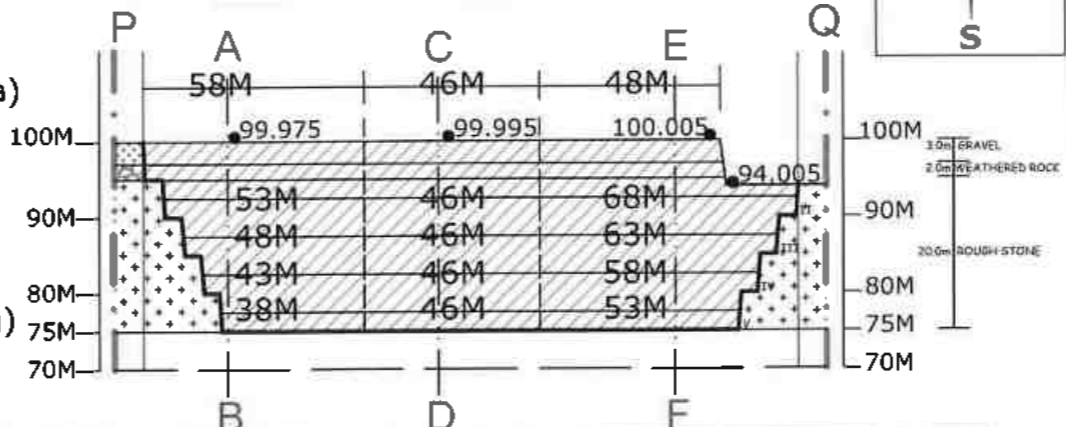


PLATE NO. VI



V.No.45 KANGAR SEVAL

SECTION ALONG P-Q



MINEABLE RESERVES

MINERAL	SECTION	BENCH	LENGTH [M]	WIDTH [M]	DEPTH [M]	VOLUME IN CUM			
GRAVEL	PQ - AB	I	58	121	3.0	21054	46,896		
	PQ - CD	I	46	61	3.0	8418			
	PQ - EF	I	48	121	3.0	17424			
WEATHERED ROCK	PQ - AB	I	58	121	2.0	14036	31,264		
	PQ - CD	I	46	61	2.0	5612			
	PQ - EF	I	48	121	2.0	11616			
ROUGH STONE	PQ - AB	II	53	111	5.0	29415	2,39,140		
		III	48	101	5.0	24240			
		IV	43	91	5.0	19565			
		V	38	81	5.0	15390			
		PQ - CD	II	46	51	5.0		11730	
	PQ - CD	III	46	41	5.0	9430			
		IV	46	31	5.0	7130			
		V	46	21	5.0	4830			
	PQ - EF	II	68	111	5.0	37740			
		III	63	101	5.0	31815			
		IV	58	91	5.0	26390			
		V	53	81	5.0	21465			
		TOTAL MINEABLE RESERVES						3,17,300 Cu.m.	

NAME OF THE APPLICANT:-

S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
1/28,NORTH STREET, E.T.REDDIAPATTI VILLAGE,  
ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
VIRUDHUNAGAR DISTRICT - 626 131.

INDEX:-

- LEASE APPLIED BOUNDARY
- SAFETY DISTANCE 7.5M & 10M FROM CART TRACK
- BOUNDARY PILLARS
- CONTOURS
- BENCH MARK
- APPROACH ROAD
- LAYOUT OF MINE WORKING
- ULTIMATE PIT SLOPE

ROUGH STONE / JELLY / GRAVEL QUARRY

CONCEPTUAL MINING PLAN

SECTIONS

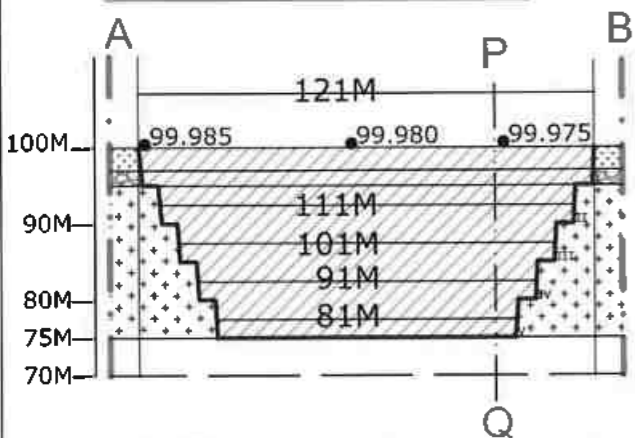
PLAN SCALE:- 1: 2000

SECTION SCALE:- HOR- 1: 2000, VER- 1:1000

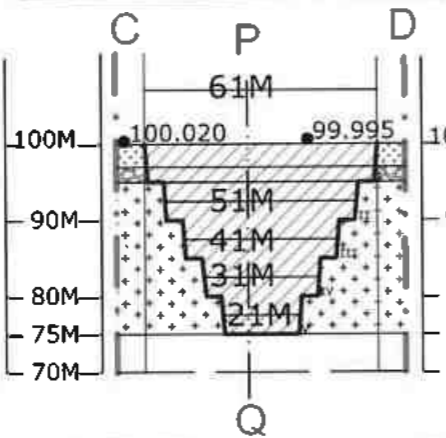
ALL PLANS AND SECTIONS ARE PREPARED  
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*G. Ravichandran*  
**G.RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
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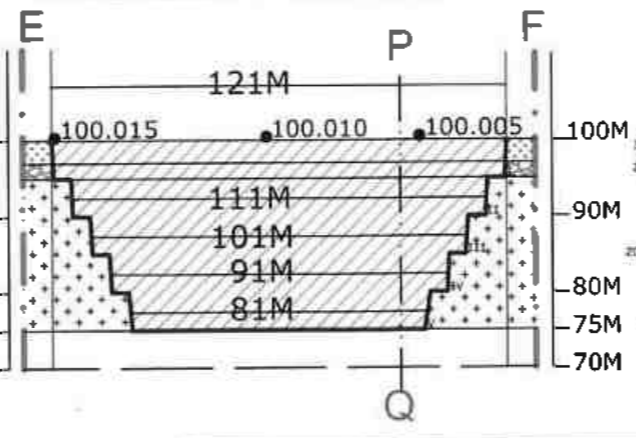
SECTION ALONG A-B



SECTION ALONG C-D



SECTION ALONG E-F



*S. Ravi*



500m Radius from the proposed quarry ( S.Ramachandran applied area)

Quarries details	SL.No.	Name of owner	Village name	Survey nos	Extent (Ha)	Distance (m)
a. Existing workings	1.	T.Kannan	Ethirkottai	640/2,642/3B,644b	1-88.0	400
	2.	S.Ramachandran	Ethirkottai	649/1,3,688,etc.,	3-94.5	100
b. Abandoned	3.	T.Ragavan	Kangarseval	310,311/2	1-65.5	375
c. present proposed	4.	Ramachandran	Ethirkottai	672/3,674,675/2,676/3	2-28.0	applied
	5.	T.K.Bharath	Ethirkottai	650,651/1,etc.,	3-65.5	310
	6.	Govt.poramboke	Ethirkottai	648	1-03.5	30
<b>TOTAL EXTENT (Ha)</b>					<b>14-45.0ha</b>	



**NAME OF THE APPLICANT:**  
S. RAMACHANDRAN, S/o. SUNDARA REDDIAR,  
1/28,NORTH STREET, E.T.REDDIAPATTI VILLAGE,  
ETHIRKOTTAI POST, VEMBAKOTTAI TALUK,  
VIRUDHUNAGAR DISTRICT - 626 131.

**PROPOSED QUARRY LOCATION**  
**DISTRICT :** VIRUDHUNAGAR  
**TALUK :** VEMBAKOTTAI  
**VILLAGE :** ETHIRKOTTAI  
**S.F.Nos. :** 672/3,674,675/2 & 676/3  
**EXTENT :** 2-28.0 HECTARE.

**INDEX:-**

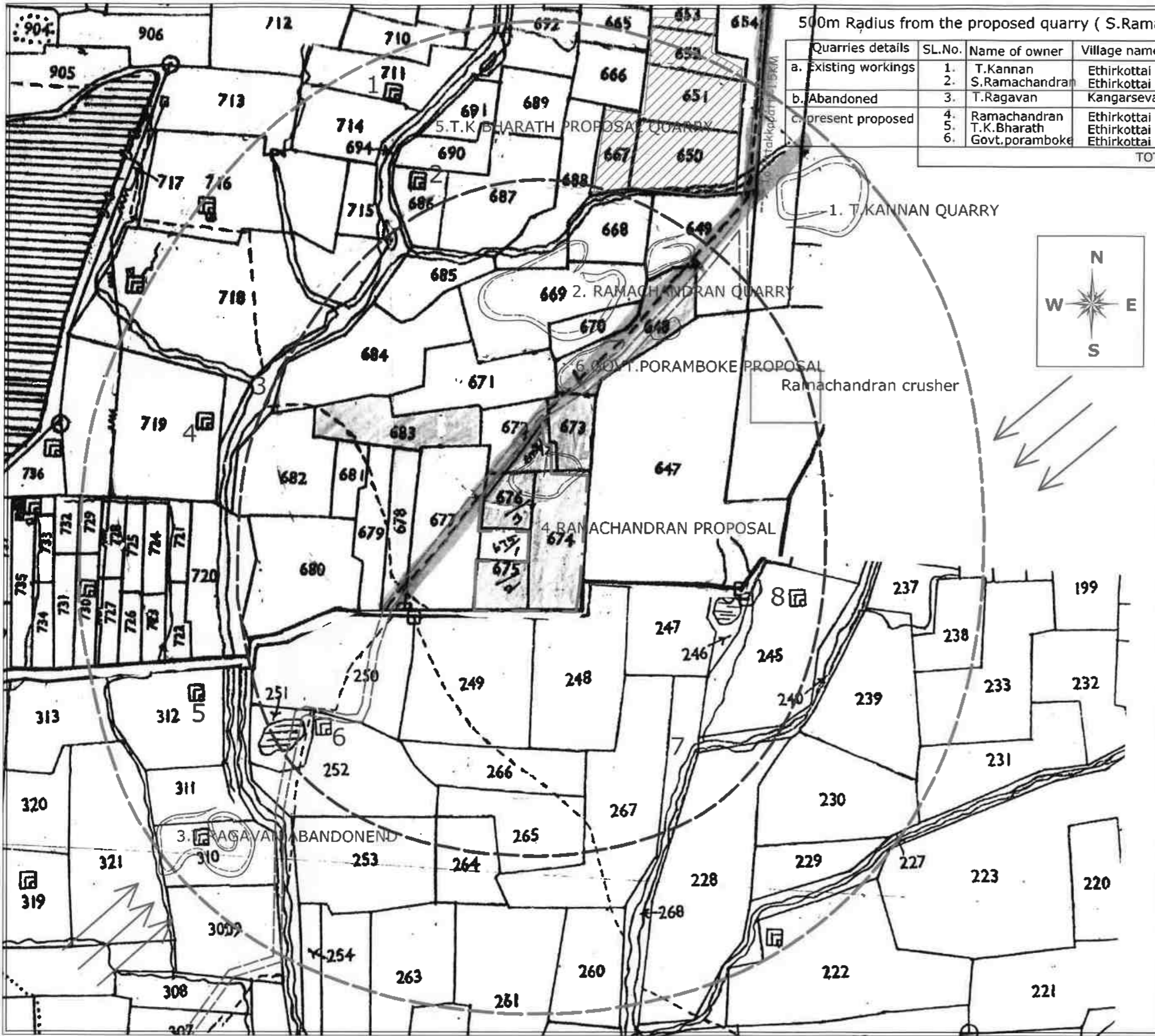
LEASE APPLIED BOUNDARY	
APPROACH ROAD	
300M RADIUS	
500M RADIUS	
WIND DIRECTION	

ROUGH STONE / JELLY / GRAVEL QUARRY  
**ENVIRONMENTAL PLAN**  
SCALE:- 1: 5000

ALL PLANS AND SECTIONS ARE PREPARED  
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**G.RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,**  
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*(X) S. Ravi*



500m Radius from the proposed quarry ( S.Ramachandran applied area)

PLATE NO. VIIA

Quarries details	SL.No.	Name of owner	Village name	Survey nos	Extent (Ha)	Distance (M)
a. Existing workings	1.	T.Kannan	Ethirkottai	640/2,642/3B,644p	1-88.0	100
	2.	S.Ramachandran	Ethirkottai	649/1,3,688,etc.,	3-94.5	100
b. Abandoned	3.	T.Ragavan	Kangarseval	310,311/2	1-65.5	375
c. present proposed	4.	Ramachandran	Ethirkottai	672/3,674,675/2,676/3	2-28.0	applied
	5.	T.K.Bharath	Ethirkottai	650,651/1,etc.,	3-65.5	310
	6.	Govt.poramboke	Ethirkottai	648	1-03.5	30
TOTAL EXTENT (Ha)					14-45.0ha	



**NAME OF THE APPLICANT:**

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**PROPOSED QUARRY LOCATION**

DISTRICT : VIRUDHUNAGAR  
TALUK : VEMBAKOTTAI  
VILLAGE : ETHIRKOTTAI  
S.F.Nos. : 672/3,674,675/2 & 676/3  
EXTENT : 2-28.0 HECTARE.

**INDEX:-**

- Static water table in winter - 45M  
in summer - 50M
- AREA APPLIED FOR QUARRY LEASE
- APPROACH ROAD (GOVT. PROMBOKE ROAD & Appicant own patta land)
- 300M RADIUS LINE  
(No well, No historical monuments)
- 500M RADIUS LINE  
(No habitations, No temples, one quarry with in 500m & No other structures like culverts, head works, bridges etc.)

BASE LINE DATA FOR WATER BODIES

SL.No	Details	Direction	Distance(M)	Depth(M)	Waterlevel
1.	Well	North	480	16	dry
2.	Well	North	320	14	dry
3.	Seasonodal	West	300	1.8	dry
4.	Well	West	340	14	dry
5.	Well	West	360	16	dry
6.	Well	South	270	15	dry
7.	Seasonodal	South	260	0.75	dry
8.	Well	East	280	14	dry

ROUGH STONE / JELLY / GRAVEL QUARRY

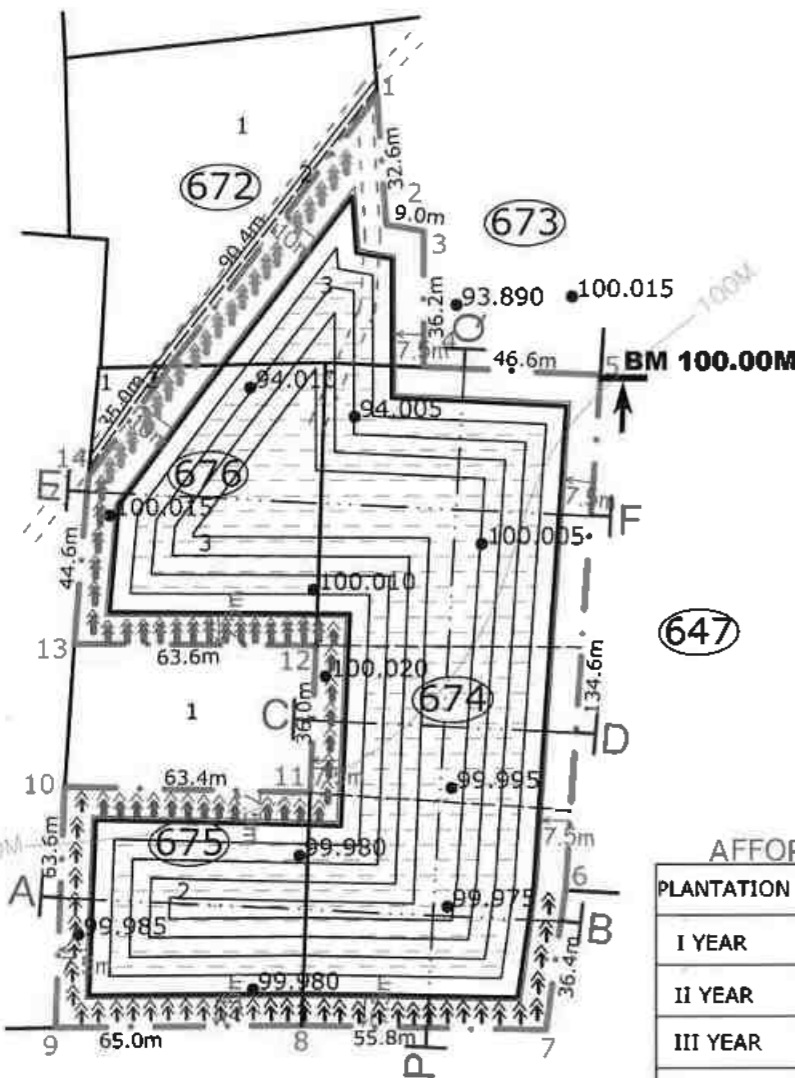
**VILLAGE MAP**  
showing environmental features

SCALE:- 1: 5000

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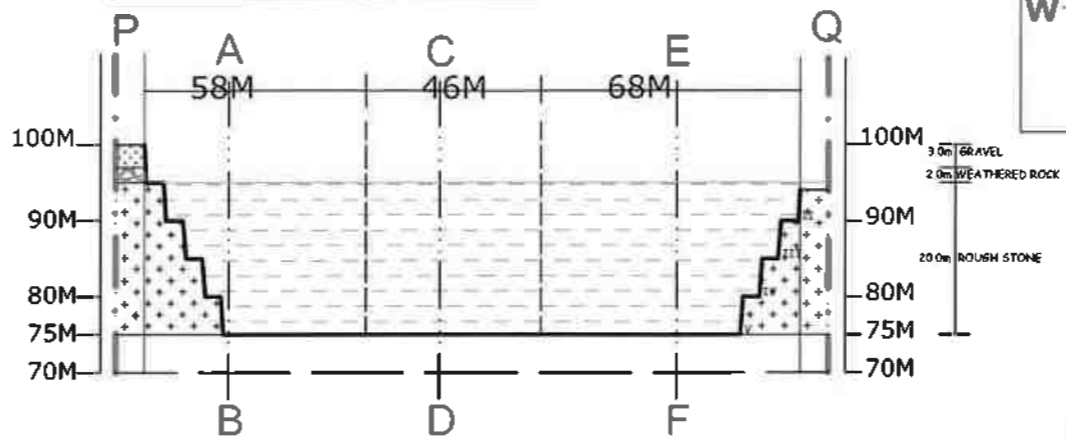
G.RAVICHANDRAN, M.Sc., P.G.D.M.E.M.,  
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RQP / MAS / 197 / 2005 / A  
VALID UPTO: 12.12.2025

*S. Ramachandran*



V.No.45 KANGAR SEVAL

**SECTION ALONG P-Q**



ULTIMATE PIT SIZE			
SECTION	LENGTH[M]	WIDTH[M]	DEPTH[M]
PQ-AB	58	121	25.0
PQ-CD	46	61	25.0
PQ-EF	68	121	25.0

**NAME OF THE APPLICANT:**

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- CONTOURS
- BENCH MARK
- APPROACH ROAD
- LAYOUT OF MINE WORKING (FUTURE WATER RESERVOIR)

**AFFORESTATION PROGRAMME**

PLANTATION	TYPE	No of TREES	SPACING	AREA (Ha)	SURVIVAL	
I YEAR	NEEM	20	6m x 6m	0-07.2	80%	↑
II YEAR	NEEM	20	6m x 6m	0-07.2	80%	↑
III YEAR	NEEM	20	6m x 6m	0-07.2	80%	↑
IV YEAR	NEEM	20	6m x 6m	0-07.2	80%	↑
V YEAR	NEEM	20	6m x 6m	0-07.2	80%	↑
<b>TOTAL PLANTATION AREA</b>				<b>0-36.0Ha</b>		

**PRESENT MINING LAND USE PLANNING (BREAKUP ALONG WITH GREENBELT ETC.;**

SL.No.	LAND USE CATEGORY	AT THE END OF LIFE OF MINE
1.	Mining / Excavation	1-80.0 hectare
2.	Storage of Top soil	0-00.0 hectare
3.	Sorting and mineral Dressing yard	0-00.0 hectare
4.	Infrastructure & Road	0-05.0 hectare
5.	Afforestation (greenbelt & plantation)	0-36.0 hectare
6.	Water reservoir	1-80.0 hectare (after closure of mine)
7.	Undisturbed area	0-00.0 hectare
8.	Fencing	0-07.0 hectare
<b>TOTAL</b>		<b>2-28.0 Hectare.</b>

**ROUGH STONE / JELLY / GRAVEL QUARRY**

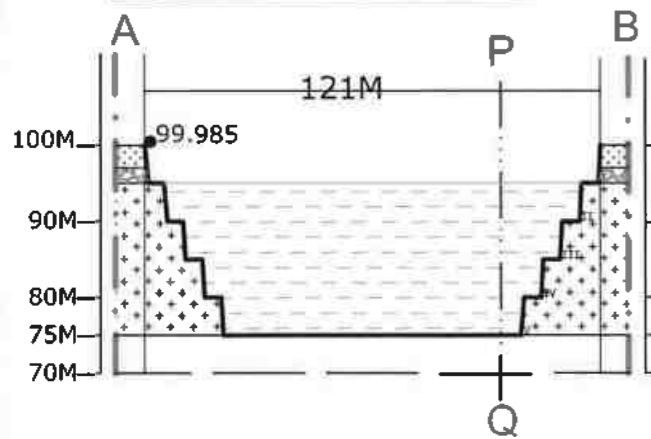
**PROGRESSIVE MINE CLOSURE PLAN**

SCALE:- 1: 2000

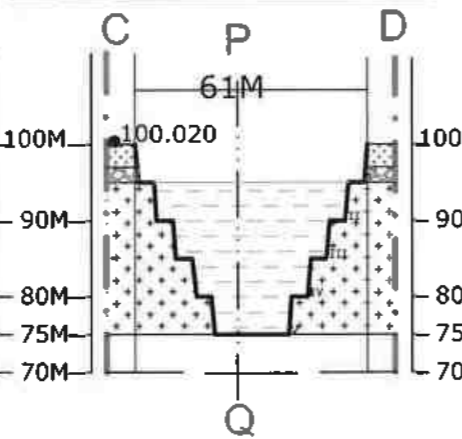
ALL PLANS AND SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.

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**RQP / MAS / 197 / 2005 / A**  
**VALID UPTO: 12.12.2025**

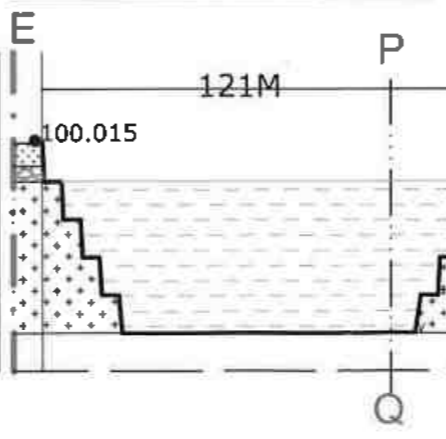
**SECTION ALONG A-B**



**SECTION ALONG C-D**



**SECTION ALONG E-F**



*S. Stanley*